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WASHINGTON, D. C.

AUGUST, 1917

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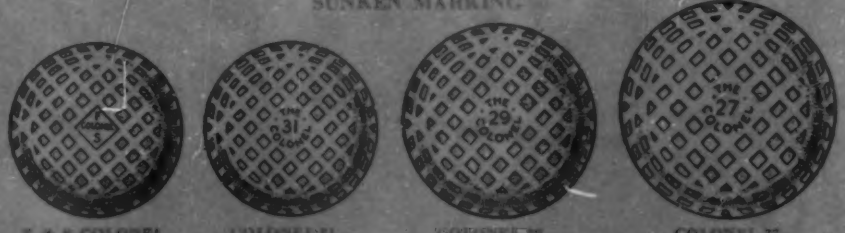

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Bayonet Fighting and Physical Training

By Major Percy Hobbs, Canadian Forces

WHEN war broke out I happened to be fully and correctly informed of what a great part the bayonet would play in its settlement. With like-minded men I was shocked at the generally uninformed state of military opinion on this matter. Events have shown that it is with the bayonet that success in battle is still proved and that modern science has not done away with hand-to-hand fighting.

Thus in Canada, less than two years ago, there was no bayonet training at all and physical training was done "any old way." Then we got it right in spots, a battalion here and a company there. The last 150,000 men sent over have had the training I am about to describe and illustrate before going overseas. This training has been continued and carried further in England. In France it is never allowed to lapse, except when troops are actually in the trenches or fighting.

It is on the bayonet and physical training, quite as much as on munitioning, good rationing and special training in modern devilments, that the British Empire is keeping its end up over in France.

A little story will show you the real purpose of the physical training. One fine September morning at Valcartier I descended upon a void parade ground at a time when physical training should have been in full swing. One solitary officer was crossing it—a lonely fly on a yellow tablecloth. I rode up to him and asked where the battalion was, and he informed me with a liquid brogue that they'd be sorry to miss me but they had a "dispensation" that morning. I began to expound the theory that as officer in charge of bayonet fighting and physical training I alone gave such dispensations. To which his reply was an essay on the higher authority in a nutshell. "Well, the brigadier gave the dispensation and to reorganize the companies at 9.30, sor." "O. K. I'm off. See you at it tomorrow," and as I wheeled old Mary he grasped my stirrup leather and "A word in your ear, sor, before you leave." "Yes." "I'm of the old school like the brigadier and I don't believe in it, wasting time making these strong Canadians stronger."

So I told him I was of the new school, but perhaps we weren't so far apart as he thought. He, I said, was a good Christian Irishman while I was a free thinking Scot. Had he ever noticed that the English were an intellectually lazy people? He had. Well, physical training was a joke on them. It was not physical at all, it was for what I called their minds and nerves and wills and what he would call their spirits and

their souls. Had he ever considered that the British Army saved more souls than all the churches of England, Ireland and Scotland combined? Well, if you told the English to line up and wag their arms and legs about every day for their minds or their souls, would they do it? No. But tell them it would make their bodies stronger and their appetites larger, call it *physical* and they'd do it or die. There it was, and he said, "I see it now, sor, and my company will be all on parade tomorrow." They were, and I beheld them from the height of Mary's saddle. My gallant Hibernian friend fell out as I passed, and "A word in your ear, sor," says he; "I've 40 Englishmen in my company saving their souls and they don't know it." He also had 60 Irishmen perspiring to my satisfaction and the glory of the Lord, but I did not rub that in.

So much for the ideals of the Swedish system adopted in all European armies and what the British version is capable of in the way of regeneration by a daily hour of keeping men's mouths shut and their pores open. How is this to be got from the manuals and the schools to the officers and other ranks?

The ideal method for a battalion in camp for training is to have 20 assistant instructors of its own and one lent staff instructor. Then the whole unit can do physical training in one and the same hour to the convenience of all concerned.

When only one instructor is available, let us say, for each company—that is, 4 for a battalion—a time-table has to be worked out so that each instructor takes classes of about 30 to 40 men, one after another; 4 or, if necessary, 8 classes in a day.

I have very good authority for the statement in this connection that what they want in France is people who cut their hair short, shine their buttons and salute their officers, have their eight tables of physical training and the five bayonet fighting lessons done with, can march 20 miles, and if they can shoot (rapid fire) so much the better. Bombing, trench warfare and even musketry can be done better over there than anywhere else for very obvious reasons: the first to change from month to month with the development of the war and the last would be done in real earnest with the man's own fighting rifle. Moreover, all other training can be done in shorter time and with far greater efficiency by men who have again learned how to learn. This teaching of grown men how to learn again is quite as important as any other function of the physical training instructor. Practically all soldiering, certainly all elementary military training, is a matter of bodily skill as much as of mental dexterity. The gymnastic staff teaches men not only how to use their bodies but *how to learn* to use them.

In the latest pamphlet on the organization of the fourteen weeks' syllabus of training for recruits it is laid down for every branch of training, musketry, bombing, trench warfare, etc., that the recruit must first be physically fit, and this applies even more obviously to the bayonet training than to the other special branches.

The physical training instructor doesn't even teach his class the military alphabet but rather how the letters are formed. That is why we find ourselves in hot controversy with other branches of training as to allotment of time. We ask not for *most* but for *first* pick

at the time-table—a right of way where raw troops are concerned.

The army system of physical training or Swedish drill consists of eight progressive tables of exercises for recruits, two for trained men (one being for those who have not been doing physical training regularly), and some short 5 and 10 minutes tables for orderly room workers. In the latest amended eight tables 30 per cent of the exercises are specially selected and arranged with reference to bombing. At the beginning of the war the academic Swedish ideal of groups of exercises designed to give an even development of the body was the aim. Specialization has since crept in to a certain extent, and the tables as they now stand consist of exercises arranged and selected with direct reference to bayonet fighting, bombing and drill movements generally, but the ideal of symmetrical general development of the body is not lost sight of.

Now this very elementary physical training, like all other elementary teaching and training, is very difficult to give. good physical instructors are natural phenomena, but when discovered they need a careful and systematic training. There is one thing the C. A. G. Staff cannot do directly of themselves or second hand through the assistant instructors—get results without continuity of training. That is like making bricks without straw. Continuity means 6 days a week as laid down, and continuity means 90 per cent of the strength affected daily and not 30 per cent one day and 50 per cent the next. Without continuity the instructors will lose snap and style, while the men instructed will be bored to extinction and physical training will become "a weariness to the flesh."

While the results have varied considerably there have been several units raised and trained in Canada which have completed their work so far as this branch of training is concerned before going overseas. The training of the 20 instructors in such cases represented only one month's work for one C. A. G. Staff Instructor. Five months later these units were on the trained men's tables under their officers, and all ranks could go over the bayonet fighting assault course, 5-foot jump, and all in style 800 strong of a morning.

One of the peculiarities of a voluntary army is that when officers accomplish their orders as officially laid down and intended, it is taken for granted and this is as it should be. Another pecularity is that officers who fail of their trust do not come to grief as soon as they would in civil life, among the marts of men. Our building contractors can finish a job, large or small, anywhere in the broad dominion of the U. S. A., within 5 per cent of the foreseen cost and to the date specified in nine cases out of ten. Officers with military authority to help them should be able to achieve similar results or suffer commensurate consequences.

A soldier's training with us costs about 40 cents an hour dividing the cost of his maintenance to the state by the number of hours training he does. He is maintained that he may be trained. An hour's training is usually 40 minutes of actual instruction if things are fairly well managed. Forty men is the usual strength that a platoon turns out and the platoon is the training unity.

Forty men at 40 cents is $16.00 for 40 minutes work. Each minute wasted by the platoon costs the country 40

cents—40 cents to the credit of the Kaiser! That is to say, 40 cents an hour per man, while on parade, is what his officers have to account for to the Militia Department, the Country, the Empire, the Allies and the Lord God Almighty, for this is a righteous war, you know.

The present system of physical training in the British Army is controlled from Headquarters Gymnasium, Aldershot. It is divised by experts of international reputation and is revised from time to time, and instructors are not only trained but kept up to date by means of frequent refresher courses.

Our branch makes instructors by the following process:

1. Good noncommissioned officers are selected in the units.
2. They get a 21-day course.
3. They return to their units and are used for, let us say, a month.
4. If they show promise they are given a second course of 21 days at a headquarters school.
5. Then if they make good after returning to their units the certificates are endorsed and they wear the cross-sword badge, say 4 months after selection.

We have had considerable difficulty when raising new units in quantity to get real noncommissioned officers selected to make into bayonet fighting physical training instructors, and are now engaged in the very interesting experiment of making men who show promise as physical training instructors into good noncommissioned officers at a "Special Training Depot." This physical training course takes 6 weeks instead of 21 days and a great deal of noncommissioned officer training is added so that the product may be an all-round drill instructor.

BAYONET TRAINING

The main difficulties of bayonet training are really of a more subtle kind than those of physical training and hinge upon this, that fighting as distinct from shooting and crawling about in holes is, like prayer, 90 per cent an affair of the spirit, and this depends on the instructor in bayonet training, whose function is less to impart information than to arouse latent spiritual forces.

The physical training instructor is there for the finding out and the training (about 5 per cent of the men who enlist could be made into physical training instructors). As a matter of fact 2 per cent of the infantry actually attend the 21-day schools and half of these get the cross-swords badge eventually—that is to say, 1 per cent of the infantry become bayonet fighting and physical training instructors after passing through our hands. To begin with, only some of these have any natural ability as bayonet instructors. These difficulties apply of course to our conditions in Canada, where we have been raising armies without anything worth mentioning as a backbone of experienced noncommissioned officer instructors. They were always better off in England in this respect, and at the busiest period over there they had a fair allowance of bayonet fighting and physical training instructors proficient in both branches and selected for both sides of the work. We in Canada have had to rely more on finding and using natural talent.

Now it is a cardinal point in my creed that in every fit man the fighting

instinct is there, if you can only wake it up. Among the French it lies nearer the surface than among English-speaking peoples and is different in quality when discovered. With us in Canada this instinct for hand-to-hand fighting has not been cultivated in recent years as it might have been. The main reason for this is that boxing has become rather disreputable in America.

The professionals who do not fight, the referees who walk about within the ring talking to the men, the hugging, stalling and clinching which constitute the new defense, the ham-faced crowd, and the very proper revolt of public opinion that finds expression in restrictive legislation are only symptoms of the disease. What is the matter is that the Queensbury rules have been tinkered with to bring the sport into harmony with complete commercialization.

The result of all this is that very few enlisted men have ever struck a man in sport or in wrath or taken any particular interest in personal combat. Among these it is difficult to find, first of all, men with some skill and understanding of fighting, as such, and combined with this the intelligence and the "flair" of the teacher.

With English-speaking people, boxing, which is more generally understood than fencing, must take the place that fencing does in France and Italy as a basis for fighting lore. From the nature of the bayonet you can't really practice its use except upon the ensanguined Hun. Spring muskets and masks and pads are of very limited use. Personal combat involving contact and all the coordinations of sight and movement and touch and effort is at the bottom of good bayonet work, and boxing can give us that. In this connection it is worth observing that the Canadian Department of Militia and Defense was the first War Office to make gloves and punch-balls as issue, *i. e.*, to provide military stores for boxing. A very safe glove has been adopted, and the rules of the Army and Navy Boxing Association are posted in every infantry barrack room. These rules have gone far to reincarnate the sport.

A brief outline of instruction in the bayonet as now laid down will be made at this point. There are five lessons, and each has three practices. The lessons deal with positions and movements, guards, parries, long points, short points, jabs, and rough and tumble in-fighting. The first practice is movement by word after explanation. The second is movement by eye, lines of men, *vis a vis*, taking time from their opponents' movements. The third is practice—striking bags, parrying poles, etc.

Now these practices should be got over in about 15 hours of training.

After these lessons, or during their progress, the bayonet training begins by getting the men out on the assault course or training ground. Trenches, gallows with suspended dummies and prone dummies in and behind the trenches are the main ingredients. Dummy entanglements, communication trenches with dummies in the doors or dugouts, etc., can be practiced on later. A trench to get out of over the top and a high dive or 5-foot jump from which to make a flying leap landing point leading in the target are essential to the training. Once the lessons are put away, there is no difficulty in interesting the men.

Charging in lines under control

should be taught from the outset, and tactical exercises involving organized assaults (where everyone knows what to do and whom to follow) are practiced over trench systems with dummies later on.

Equipment (spring muskets, masks, pads, etc.) is of great use in demonstrating and of limited use in practicing hand-to-hand fighting, disarming, etc. Incidentally, it is of the utmost service in demonstrating to officers of the C. A. G. Staff whether an instructor knows what he is trying to teach.

So far, so good. We have taught our man to parry and return; to hit a long point, going straight for the eyes or throat and finishing where there is an opening; to hit at a man in a trench and jump it; to jump a trench and hit a man lying, firing on the other side; to dive into a trench point foremost; to withdraw from one victim with the necessary force or other expedients and get on to the next one; long, short, or jab as he finds himself in the matter of reach; to charge in lines, keeping in line, and to be in control when in line, etc., etc.; and when this has been done our man has probably a great deal more confidence in himself than he had before, besides being handier and quicker with his weapon and stronger and more nimble on his pins; that is to say, he is game to close with his man.

That is a good deal, but in my view it is not nearly enough to secure victory. With real points in the real thing, in nine cases out of ten (trench or open) the men grapple.

Well, they have grappled, and the man who has never been there before, so to speak, doesn't know what to do. He has been shown and practiced in shortening arms and jabbing and dropping his weapon and disarming the other fellow, and a lot of counters and trips and tricks. Well, your average trained men tie themselves up in a knot and roll about on the grass and forget everything.

In fencing one must keep one's head; otherwise the mind revolves in a vicious circle, and so does the weapon, repeating a fatuous, instinctive movement. To repeat the same movement twice against a good opponent spells defeat.

In boxing one notices the same thing. A perfectly fit man with a good style begins to lose his head and does the same thing over and over again. If the other fellow is any good, the quietus of a knockout is then inevitable. In boxing, of course, there is the added interest over fencing of pain and exhaustion.

Now this faculty of keeping your head, even when you get the worst of it for a time, even when you are hurt and used up, is what matters most of all in hand-to-hand fighting as in general command in the field.

Mr. Morse, in his wonderful book, "An Englishman in the Russian Ranks," tells of bayonet fighting in which his own clothes were torn to rags, as he put it, "because of the saw on the back of the German bayonet." Fights where wave after wave of Huns pushing the shattered earlier waves before them bore down on the Russian lines in solid pressure. The fighting resulted in filling the trenches to the tops with dead and strewing corpses three deep on the parapets, and in this fighting, which went on for hours, not minutes, wherein individual engagements were tedious affairs, he speaks of seven men of his company as doing

all the work while the rest backed them up. Such men in these engagements, he says, killed from twenty to forty Huns each before succumbing from exhaustion; and I can well believe it, for nothing tells like skill and spirit in fighting with weapons; and a very slight advantage in skill gives the victory, and one success steels the spirit to achieve the impossible.

Now, what is true of the Russians, who are reckoned only inferior to the Bulgars with the bayonet—and the Bulgars are the best in the world, you know—is, I think, true of ourselves in Canada.

In a company without any bayonet training there will be on the average half a dozen men who are fighters; *i. e.*, could get their first man and then get "set" as one does at cricket to the destruction of the bowling. There is no reason why, with the aid of gloves and the army boxing rules, these half-dozen should not leaven the heap.

I have seen youngsters in khaki turn pale lilac with orange blotches on being told to put on the gloves and give up cheerily at the end of their first round, notwithstanding the fact that they were daily going over the jumps and hitting the bags about; and I have seen the same boys six weeks later, in the strength of their youth and fitness, come up against skilled boxers in the regimental boxing competition finals, get a fourth round ordered, and come up with a grin for a certain knockout.

A fight to a finish with the gloves is an excellent experience for anyone. I don't mean a ten-round heart-destroyer, but a short fight—like h—— all the time. Such a fight is, in my view, an essential part of an infantryman's training. Whether he wins or loses, he learns a lot. Bayonet training does the 10 per cent that is not spiritual in the making of a fighter, and boxing can do the other 90 per cent. That is the make-up of the first-class fighting man.

The way to get boxing to go in a battalion is to hold a competition and so eliminate the good men. These can thèn be given groups of men of their weights to coach and train. The second competition may be open to novices only, and the third may be made compulsory for every man who has not yet boxed and won.

In six weeks, working two or three hours a night, with half a dozen officers to take time as officials, I have seen 800 men fight off in six weights.

In five hours at the ringside on a Saturday I have refereed forty bouts.

We allow 20 points up for a win. If one man gains the lead in the first round he wins. Otherwise they fight usually two-minute rounds, with an extra round when required. The result is that they fight like h—— all the time, and knockouts in the first round are not uncommon. With four men in the ring and four more ready outside, two box for two minutes a time, and their rest time is two minutes to allow the other pair to go in. Thus we get through the bouts at the average rate of five minutes each couple, and less if there are many knockouts.

Giving Commands

By First Lieutenant William H. Wilbur, Infantry

A COMMAND, correctly given, has three general attributes—tone, quality, and volume. Of these three, volume is the least important. Tone is very important from the commander's viewpoint, as the tone, to a great extent, determines the strain on his voice. Quality determines the distinctness of the command, whether it may be readily understood, effects the carrying power of the command, and also effects the strain on the vocal apparatus.

First, in giving commands, the commander should place himself so that he can see the entire command and so that the entire command will be included within the cone of maximum sound formed by his voice. This will generally be a point opposite the center of the command and at least as far from the command as one-half its width. In addition to locating himself so that he gets the maximum results from his efforts, the commander should always assume a military attitude in giving commands, for two reasons—first, because of the potent effect of a good example, and, second, because he can give his commands better. If the shoulders are thrown back and the chest lifted, commands can be given with maximum power and minimum effort. If the head is held high, the throat may be more easily opened and the sound is least obstructed because the throat forms a straight passage. In addition, the raising of the chin gives most freedom to the vocal organs. If the head is allowed to droop, none of the above advantages will be obtained and the sound will be thrown down towards the ground and soon be lost. The head, shoulders, hands—in fact, the entire body—should be kept still when giving commands. The snap and force needed, especially in commands of execution, are obtained by a proper functioning of the diaphragm, the air being expelled suddenly from the chest by its use, not by flapping the arms or performing other convulsions. Always look directly towards the command and never look down towards the ground.

Sound is formed, and its pitch, tone, and quality are determined in the throat. In order to preserve the voice a constant effort should be made to keep the pitch down, and the tone produced should come from the chest, not from the head. Other things being equal, the low-pitched voice will be able to give good commands for some time after a high-pitched voice will have failed from over-strain. The best tone quality is obtained by opening the throat as wide as possible and holding the head up so that the tone is least obstructed and most resonant. The teeth should also be opened in order not to obstruct the tone. Beginners will find it almost impossible to open the throat without opening the mouth at the same time, and should very properly do so.

The sound having been formed in the throat, the mouth, tongue, teeth, and lips shape the sound into words. Failure to properly use these parts of the vocal apparatus is a general fault and results in unintelligible commands. It is a simple matter to bellow loud enough to be heard several hundred yards; the

difficult thing is to make the bellow intelligible even at a short distance. The secret of making commands intelligible lies in proper enunciation and clear-cut elegance of diction. To enunciate a word properly, care must be taken that both the first and last letters of every single syllable are distinctly sounded, and that words are ended fully and sharply, without allowing the voice to droop on the last syllable.

All commands which permit it should be pronounced as broadly as possible, as the voice has its best quality and is least strained when forming sounds which are given with the throat open. All "a's" should be pronounced like "a" in "father." Short closed sounds such as the "a" in "day," when given with any great volume of sound, constrict all the muscles of the throat and soon inflame the throat tissues.

Commands of execution need not have excessive volume, but must be short, sharp, and given at the proper time. Too great stress cannot be laid on this necessity for giving commands of execution at the proper instant. If marching, the command of execution of all movements should be given as one of the feet strikes the ground. In such commands as *Company,* HALT! both commands should be given in cadence; the first as one foot strikes the ground, the second as the same foot strikes the ground again. It is preferable to give all commands possible on the left foot (except changes of direction to the right, when the command should come on the right foot). In order to be able to give commands at the proper instant the commander must have thoroughly absorbed the cadence of quick time and should never depend on watching the feet of his command or thinking of his own feet in order to give his commands correctly.

Commands of execution, given both at a halt and while marching, should follow the preparatory command at an interval which is sufficiently long to enable every man in ranks to clearly understand the command. Beginners very frequently fail to give sufficient interval and should, for that reason, pay particular attention to it. The interval should be longer when giving commands to large bodies than when giving them to small bodies. An interval equal to the time required to take four steps in quick time is ample when giving commands to a very large company, and may be reduced to the time required to take two steps when giving commands to smaller units. When giving commands to a battalion or other unit in which the preparatory command must be repeated by subordinate commanders, there should be an interval between the last preparatory command and the command of execution not less than the time required to take two steps in quick time.

The methods of giving commands indicated above are especially applicable to commands given to dismounted units. Where the control of horses is involved the interval between commands should be about double that used in commands given to dismounted units, this to allow the horse to be prepared for the command of execution. Commands of execution given to mounted units are usually more prolonged, as mounted movements are not normally executed as sharply as dismounted movements; also there is frequently more noise, above which the command must be heard.

A command which has all the mechanical perfections above outlined still falls very far short of being a perfect command if it has not in addition enthusiasm and a vibrant "lift" which makes every subordinate want to do, and proud to do, his best. Excellent drill sergeants have the mechanical perfections; the officer should most assuredly be equally well equipped in that respect, but he should also use his commands to stir the men and bring out the best that is in them. Slovenly, monotonic, drooping commands will transform the best organization in the world into a listless, careless, and worthless mob. A cheerful, vibrant, forceful command will just as quickly restore them to a willing, inspirited, efficient entity.

What Do You Think of This?

On July 20 Senator Owen submitted the following as a proposed amendment to S. 1,786:

"On page 7, line 20, insert the following at the end of section 10:

Provided, That hereafter the commissioned officers of the Medical Corps of the Regular Army shall be distributed in the several grades as follows:

	Per cent
Major generals	0.25
Brigadier generals	.25
Colonels	4.00
Lieutenant colonels	8.00
Majors	23.5
Captains	32.0
Lieutenants	32.0
	87.5
	100.00

Provided, That when called into service the numbers of the officers of the Medical Reserve Corps shall be seven to the thousand of men in the National Guard and National Army and the relative grades of the officers of the Medical Reserve Corps shall be the same as the grades of the Regular Army.

The President shall have authority to appoint officers of either corps as "consultants," with the duty of acting in an advisory capacity, making inspections and reports on medical, surgical, or sanitary questions, and such other duties as may be required by the chief of the Medical Department.

Memorandum relating to amendment proposed by Senator Owen to the Senate bill 1786 (amending national-defense act as reported June 8, 1917) to fix ratio of Army medical officers.

Titles.	Present percentage composition of the grades in the Medical Corps, U. S. Army (act of June 3, 1916).	Proposed percentage composition of the Medical Corps, U. S. Army, as calculated from the number given in the General Staff bill.	Proposed percentage composition of the Medical Corps, U. S. Army (Owen amendment).[1]
Lieutenant general			
Major general			0.25
Brigadier general[2]		[3]0.34	.25
Colonel	3.16	1.64	4.0
Lieutenant colonel	5.42	3.62	8.0
Major	23.70	21.48	23.5
Captain	67.72 — 91.42	35.33 — 94.40	32 — 87.5
First lieutenant		37.59	32
	100.00	100.00	100.00

[1]Figures based on the percentage composition of the Medical Corps, U. S. Navy, assimilated rank, as per the act of Aug. 29, 1916: "The total number of commissioned officers of the active list of the following mentioned staff corps at one time, exclusive of commissioned warrant officers, shall be distributed in the various grades of the respective corps as follows: Medical Corps, one-half medical directors with the rank of rear admiral to four medical directors with the rank of captain, to eight medical inspectors with the rank of commander, to 87½ in the grades below medical inspector."

[2]There is one brigadier general to more than 1,600 medical officers allowed by the act of June 3, 1916.

[3]One brigadier general is proposed for 2,932 medical officers.

Field Fortification

Authentic Sources

FOURTH LECTURE—Continued

PART IV

DEFENSIVE ORGANIZATION OF A SECTOR

34. A position is constituted by a line of supporting points.

But these supporting points are themselves grouped rationally so as to constitute sectors each occupied by a big unit: Army Corps Sector, Division Sector, and, where necessary, Brigade Sector.

The sectors, according to tactical circumstances and the terrain, may have very unequal extents and comprise a variable number of supporting points.

In addition to the work executed in the supporting points and in intervals between them, the defensive organization of a sector will comprise a certain number of works of general interest, for example:

(1) *Communications* (development of a good system of routes, installation of railroads of 2 feet and 1 foot 8 inches gauge).

(2) *Shelters for sector reserves* (natural shelters prepared and improved).

(3) *Emplacements for field and heavy artillery* (masked, protected: the protection may be very great by the use of concrete).

(4) *Boom-proof storerooms for ammunition and explosives.*

(5) *Barracks and sheds for men, horses and matériel.*

(6) *Arrangements* of all kinds in the rest cantonments.

The commander of the sector has at his disposition sector reserves and artillery, which is assigned to him as his own, independently of that which may be in his sector, but whose use is reserved to the higher command.

A telephonic and telegraph system well kept up, having its center in the command post of the commander of the sector, will connect them up:

(*a*) Towards the front with the commanders of the different supporting points of the sector.

(*b*) Laterally with the commanders of neighboring sectors.

(*c*) To the rear with the higher command of the organization.

PART V

ORGANIZATION OF THE SECOND AND THIRD INTRENCHED ZONES

35. In rear of every intrenched zone there must always be established an intrenched zone which will be constituted in an identical fashion to that of the first: supporting points organized in depth and group in sectors. It must be studied and organized, entirely independently of the first zone, in the best conditions for its own defense.

The second zone must be stronger than the first; its place can be selected and studied better, better flanking dispositions, the accessory defenses more solid and more complete, the shelters more carefully constructed.

The distance from the first to the second zone is variable. The latter must be chosen in such a manner that the enemy, from the same emplacements, cannot prepare an attack simul-

taneously on the first and second positions. Invisibility must be sought. Traces in woods and on counter slopes must be used.

A third zone may be established in rear of the second and according to the same principles.

According to circumstances (importance of a sector, menace of the enemy, workers available, materials, etc.) it will be organized more or less completely, or only in its essential details.

In any case the study of the terrain must be made in the greatest detail, so as to at once complete the organization at the first order.

Part VI

Distribution of Troops

36. The troops assigned to the defense of a sector are divided in the following fashion:

(1) On service in the trenches three-eighths of the total effective, of which two-eights in the fire trenches, one-eighth in the support trenches.

(2) In sub-sector reserve two-eighths of the total effective. The troops at rest in the shelters or cantonments counted in the sub-sector.

(3) In sector reserve: three-eighths of the total effective. The troops at rest in the cantonments situated at 4 or 5 kilometers from the fire trenches.

37. *Troops on Service in the Trenches.*—These troops have a rôle of advanced posts with reference to the troops in rear available. In this capacity they must:

(1) Protect by assuring the solidity of the front.

(2) Get information for and prepare the attacks by direct observation, the sending out of patrols and the execution of sudden enterprises.

By day they have look-outs under protected observatories.

By night, a fraction of a quarter (2 officers, 4 to 8 look-outs, one squad by section) watch and observe in the listening posts, run out fan shape beyond the wire entanglements.

The rest of the garrison rests, repairs or improves the fortification, which must be constantly perfected.

The rapid execution, complete and careful, of field fortification involves the military honor of the troops in charge of it.

Any chief who tolerates a regiment working little or badly, under any pretext, is wanting in the first duty of his office.

Part VII

Special Defensive Organizations

38. *Blockhouse.* — Blockhouses are elements of strong points organized so as to obtain with a small force a strong resistance and good flank fire (Fig. 17).

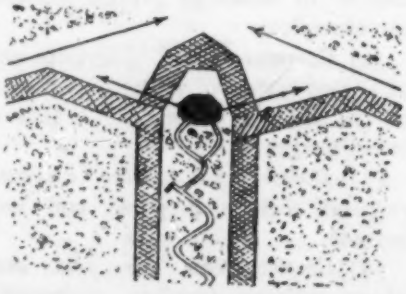

Fig. 17.—Plan of the work and accessory defenses.

In their entire make-up, they are generally constituted by covered trenches, with loop-holes for fire and emplacements for machine guns. The roof is made by a layer of logs of 0.20 m. diameter or railroad rails surmounted by a layer of earth which varies with the relief allowed.

The relief of the blockhouse must be slight, so as to diminish its visibility, unless natural masks hide it. There are many types of blockhouse.

Figs. 17 and 18 represent a blockhouse for a squad with machine guns on one flank.

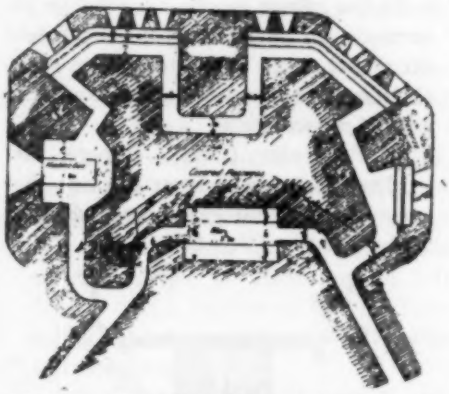

FIG. 18.—Plan of blockhouse indicated in the arrangement above.

For the details of construction of covered trenches and of shelter for machine guns, see the special chapters, Third Lecture.

39. *Closed Fire Trenches.*—Often it may be necessary to fortify in rear of the first line a special strong point. If there is no ground cover (patches of woods, villages, farms, houses, etc.) closed fire trenches may be organized (Fig. 19).

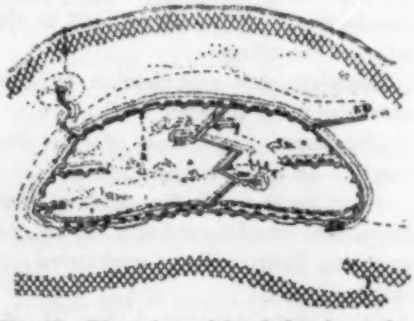

FIG. 19.—Plan of an aisle of closed trenches.

The approach trenches permit the circulation between the front and rear part of the fire trenches, as well as with the exterior.

Protected shelters and cave shelters very largely stocked with provisions and ammunition allow prolonging the defense to the limit.

INHABITED PLACES, VILLAGES

40. *Importance.*—They constitute important natural strong positions. Bloody episodes of the present war (Vermelles, Carency, Souchez, Ablain, Saint-Nazaire, Tahure, Pozières, Contalmaison, Thiepval, Combles, etc.) offer a *mask, cover,* or *obstacle,* and *communications.*

Mask.—Permits concealing the reinforcements, especially in flat country. The probable force of the defenders is unknown.

Cover.—Against artillery: the first houses provoke the burst of projectiles and stop the fragments of burst.

Against infantry: infantry fire is ineffective against walls 14 inches in thickness.

Obstacle.—To the movement of troops, it is difficult to debouch when the exits are under hostile fire.

Communications.—The localities are situated at the points of convergence of the roads and routes and command the lines of communication.

41. *Defensive Organization—Generalities.*—Big explosive projectiles have considerable effect on villages which can be seen from afar. But whatever may be the effects in the majority of cases, even after a very intense bombardment, parts of the edges of the town intact, walls left half standing, piles of débris which permit a fight foot by foot when the enemy is too close to continue firing. It is then

indispensable to provide for the defensive organization of localities, and they must not be left out of the line of defense.

This organization must be arranged with a view to putting the defending troops under shelter from the destructive effects of projectiles. To this end it is necessary to consider several principal cases on the subject of the emplacement of the principal fire crest.

42. *Edges and Approaches Seen from Afar and Easily Located by the Hostile Artillery.*—The village is considered as a cover or mask, the edge prepared as a passive obstacle which will be organized only in view of a close defense, when the hostile artillery having lengthened its fire, it will be possible to occupy the village.

The principal fire crest must be established forward of the prepared edge of the town.

The exterior edges of the town are occupied: hedges, palisades, banks, ditches, which are at *50 to 150 meters* in advance; at the same time, seek an open and extended field of fire, utilizing all the salients for flank fire, either by groups of riflemen or well-sheltered machine guns.

43. *Edge of Town Defiladed from Distant Views* (case of a village on a counter slope or in bottom of a depression). Organize the principal fire crest on that edge of the town which gives a good view and permits a very rapid and very solid organization.

Prolong this fortified edge by entrenchments for flank fire on the intervals and cross fire in front of the edge of the town; barricade the exits.

44. *Edge of Town at Very Short Distance from the Enemy* (current case in trench warfare). The considerations of the field of fire are the only ones of interest. If from the edge of the buildings of the town the terrain can be well seen to 100 and 150 meters, it is organized; if not, the fire line is carried forward so as to have better views on the enemy's position.

As the village can be subjected to an accurate and intense bombardment, the occupants must be protected by solid shelters built in the cellars and underground constructions.

45. *Particular Cases.* — Where the locality has a small front towards the enemy (village elongated perpendicular to the front). (Fig. 20.)

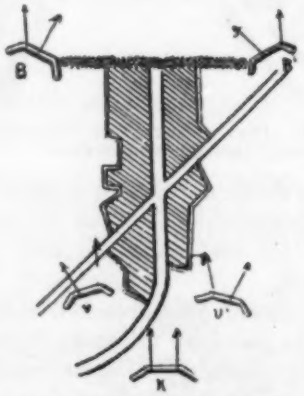

Fig. 20.—Village elongated perpendicularly.

Two groups of trenches will be dug *BB'*, covering the village. They form two bastions, whose curtain will be the edge of the village.

Complete this organization by constructing *wing* trenches *VV'*.

Organization of details of protective works.—In all cases there must be:

(1) *Clearing off the field of fire:* burning haystacks, cutting down hedges, knocking down walls of enclosures and isolated houses.

(2) *Construction of a line of ob-*

stacles, extending those which exist (iron fencing, walls of enclosures) completed by accessory defenses.

(3) *The creation of a principal line of fire.*—Organization of walls, hedges, houses, entrenchments, sweeping thoroughly the line of obstacles and the terrain in front, with shelters for the lookouts properly reinforced.

(4) *Arrangement for flank fire* (machine guns enfilading the terrain in front of the line of obstacles). Organization of *wing* trenches, in echelon, somewhat beyond the village to avoid the envelopment. To this end, utilize the obstacles which are on either side of the village, to right and to left (walls, farms, patches of woods, cemeteries, etc.) or construct new obstacles (blockhouses).

(5) *Construction of shelters in rear.*—Complete utilization of cellars and construction of subterranean shelters which will complete the system. Galleries will connect the cellars, at any rate of the same group.

(6) *Opening of communications, or their improvement.* — Protected paths all along the line of fire. Passageways through the walls and enclosures. Make the communications always with a stepped trace and not in a straight line in streets enfiladed by enemy's fire. Put up signposts and have all the occupants familiar with the communications. Put in pipe system for water, if possible, and connect up with the wells.

(7) *Organization in the village.*—During the lulls in artillery bombardment, organize the edge of the buildings for close defense, and the supports (if the principal crest of fire is in front), and if possible a second line in the interior. If a water course of a large street traverses the village, utilize them for this second line; if not, make this line in some way.

(8) *Organization of a redoubt,* whose principal value will be due to its being defiladed from distant view. Make it, therefore, in a solidly constructed house, or in an enclosure situated so as to sweep, at short range, the exits from the village. This point will be enclosed by systems of accessory defenses.

(9) *If the occupation is prolonged,* work unceasingly to complete the organization, so as to be able to make a stubborn fight, where necessary, from street to street and house to house. To this end, prepare an interior division into compartments with barricades and accessory defenses, which will separate portions of the village entrusted each to a company, or a constituted fraction, each portion forming a strong point.

(10) *Organization of a position in rear* to prevent the enemy from debouching from the village. To this end, construct some elements of trench to be occupied by supports, in good range and in rear of the exits from the village.

(11) Independently of the accessory defenses which should envelope the entire village, the lines of access to the village on flanks and front must be closed by barricades, fixed and movable, except at points which should be left free for exterior counter attacks, and whose defense will have been specially organized.

(12) The judicious employment of communications, of barricades, of interior blocks of buildings, and the complete familiarity with them of the defender give him a marked advantage by allowing him to throw his reserves rapidly on any point where an enemy,

who does not know the village, may have penetrated.

(13) Fig. 21 gives an example of the organization of a village.

(14) The hurry order for the construction of defensive works is as follows: Construct accessory defenses, barricades, organization of the line of fire, communications, shelters, redoubts, interior lines of defense, blocks of houses specially prepared ("islets").

(15) In the war of movement, such an organization, requiring a great deal of time, cannot be made. Depending on the time available, however, the above outlined plan will be approximated as much as possible.

46. *Barricades.*—They will be gener-

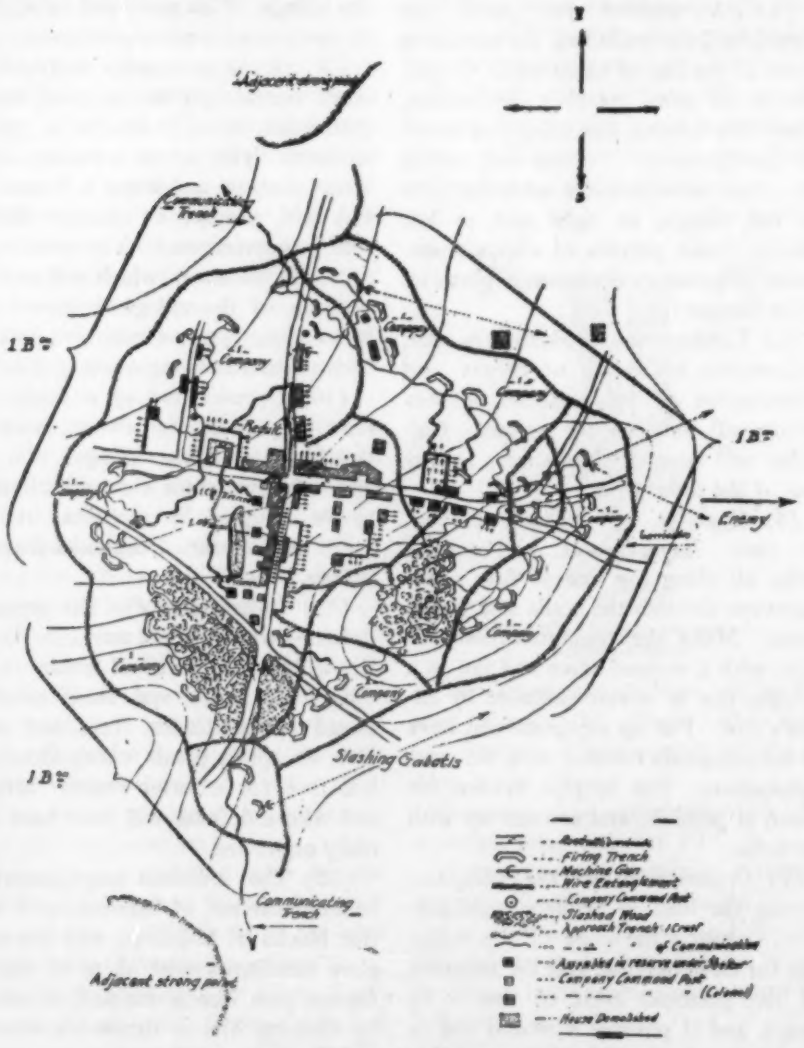

FIG. 21.—Defensive organization of a large village.

ally arranged so as to stop the enemy, not only by the obstacle they present, but also by the fire of the defenders.

They serve especially to intercept a route of access (road or trench) from which one is obliged to follow.

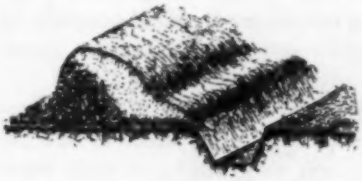

Fig. 22.—Barricade of paving stones.

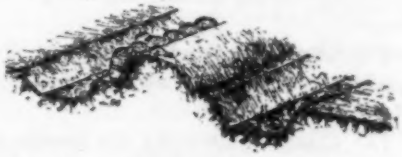

Fig. 23.—Barricade of barrels and earth.

They may consist of a parapet of earth, of sandbags, manure, paving stones covered with earth (Fig. 22), or barrels (Fig. 23), or may be composed by the bodies of carriages whose wheels have been removed or immobilized and which have been filled with nondescript material.

To permit the use of the road to the defender, the barricades are arranged in two sections, disposed in echelons, as indicated in Fig. 24.

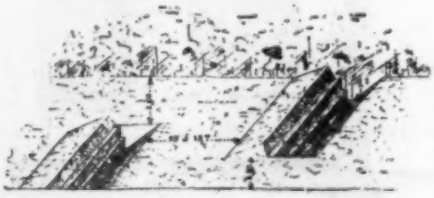

Fig. 24.

Barricades may be organized at times as simple passive obstacle; for example, to close breaches in a wall.

They are built:

With the trunks of trees disposed horizontally, one on top of the other, and held by vertical uprights and braces (Fig. 25).

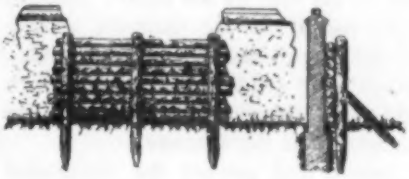

Fig. 25.

With trees cut down (Fig. 26).

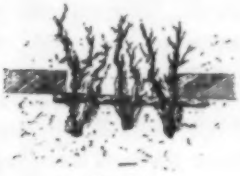

Fig. 26.

With a vehicle, loaded, between the wheels of which stumps, fagots, trunks of trees, are placed to obstruct the interior empty space (Fig. 27).

Fig. 27.

They are always placed far in rear of the edge of the village and on a line with a lateral street to facilitate movement.

47. *Organization of a Cellar.*—The ceilings of cellars, supported by posts, will be reinforced with logs, railroad rails, sandbags, broken stone, layers of concrete, augmenting the thickness of the arches and making exploding cushions.

The layers of railroad rails, buried

in concrete, will be placed on rail sleepers passing through the walls of the house and resting outside on masonry pillars. The weight of the layer of rails rests, then, on the pillars and not on the roof of the cellar. Lacking rails, embed in the concrete articles of furniture: beds, cupboards, tables, chairs; any solid point constitutes a center of attraction and resistance for the setting of the concrete.

Assure and protect the ventilation carefully.

Arrange and protect the exits; make them double. Connect the cellars with each other by subterranean galleries. Make loop-holes on a level with the ground for machine guns.

Close hermetically all useless and unprotected openings, so that the enemy cannot throw through them explosives, inflammable and asphyxiating matter.

The crumbling of the house under heavy artillery fire only augments the protection offered by the caves if the precaution has been taken to remove from the upper structure all inflammable material.

Have a stock of tools on hand for possible clearing away. Have drinking water always on hand, vessels full of a solution of hyposulphate of soda and Vermorel sprayers to counteract asphyxiating gas.

48. *Organization of a House.*—Occupy a house only where it is not subjected to artillery fire.

Where it is subjected to such fire, prepare it but do not occupy it except at the moment of the assault. Until that moment, find shelter in the cellars or hollows of the ground near at hand.

The houses which are most advantageous for being placed in a state of defense are those of two or more stories, which have partition walls, fireproof roofs, and which have salients and re-entrants which allow the foot of the walls to be swept by fire; in such houses the men are generally behind the second or third wall.

The organization comprises the following operations executed generally by the different work groups simultaneously:

(1) Remove the roof if it is inflammable, as well as any other useless object which may burn; in each room place buckets of water or piles of sand to extinguish rapidly the beginnings of fire.

(2) Open the interior doors to diminish the blast caused by the explosion of the projectile.

(3) Close hermetically the openings of the underground room and first floor, which must not be used. The enemy will not then be able to throw in explosives and inflammable materials. Barricade the doors with materials of big dimensions, those opening inward as well as those opening outward; do the same for the windows of the first floor and arrange in them loop-holes (Fig. 28).

(4) Remove the window shutters of

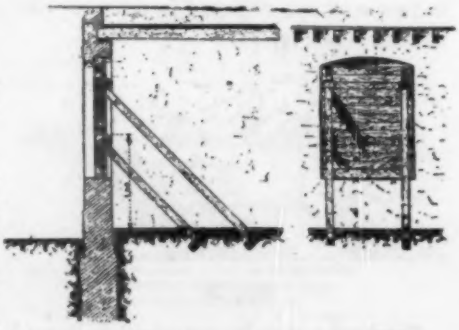

FIG. 28.—Window barricaded and provided with a loophole.

the upper stories, close the inside shutter to conceal the defenders, organize behind and up to the height of the breast a cover one meter thick with mattresses, springs, linen, trunks full of things, etc.; make loopholes in the on the first floor. On the upper stories, place them at the back of the room.

(5) In the top story place observation posts and, where necessary to get a dominating fire, some cover for riflemen.

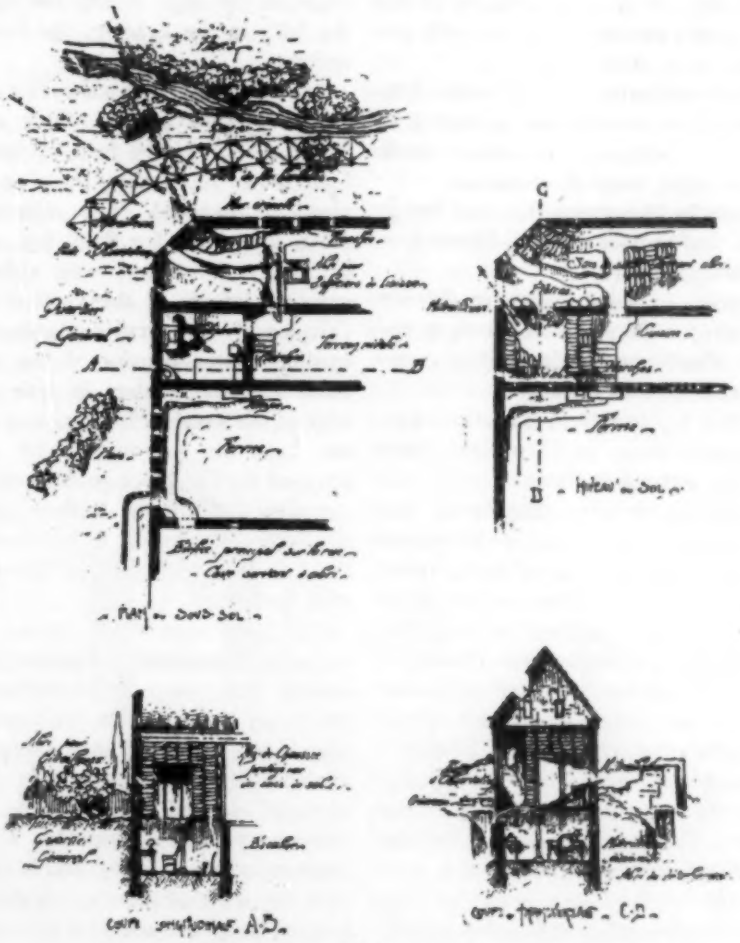

FIG. 29.—Defensive organization of a house with a cellar.

intervals of the openings; protect the riflemen placed behind the first wall against stone splinters by the aid of mattresses, planks, etc.

Machine guns level with the ground

(6) Arrange an exit in case of retreat in the face opposite that of the probable attack; barricade it, but in such a manner as to rapidly free it in case of need; make communications

which permit of easy access to this exit.

(7) Organize the flanking dispositions for the approaches by occupying the salients, making, where necessary, trenches at the angles. Place accessory defenses completely around the house.

(8) Fig. 29 gives an example of the placing of a two-storied house with cellar in a state of defense.

49. *Organization of Woods.*—The tactical characteristics are analogous to those of villages. Excellent mask against sight, even of airplanes.

Generally, the enemy does not fire at troops that he does not see. Hence protection against fire.

Combats in woods are very difficult to conduct. They are like a fight between blind men. It is especially important to possess the edge.

If the topographical situation does not permit them to be utilized, they must be destroyed.

50. *Defensive Organization of the Edges and Approaches of Woods.*—The occupant of a wood has a clear sensation of being under shelter. This belief, whether justified or not, unquestionably gives his nerves a rest.

On a large wood, the effect of artillery is very small on account of the dispersion of the projectiles. The men become quickly accustomed to fighting in woods. As they neither see the bursts nor smoke of the projectiles, the defenders keep their morale.

(1) If the development of the edge of the woods reaches 300 to 400 meters, the enemy, if he can adjust his fire for range, cannot do so for lateral direction, as he does not know which parts of the trench are occupied. Hence very ineffectual fire. The principal line of fire is organized on the edge if the field of fire is sufficient.

(2) If the development of the edge is small (small woods, elongated woods), perpendicular to the front and easy to locate from afar for the hostile artillery, carry the principal line of defense 50 to 80 meters forward and organize the edge during the night or the lulls in the fighting, for the close defense.

51. *First Case: Organization of the Crest of Fire on the Edge of the Woods.*—(*a*) If the field of fire is at least 150 to 200 meters, the edge of the wood is occupied. The salients, the exits, the points for flank fire are organized without modifying either the exterior aspect, or the vertical aspect (airplanes). The first line is placed, according to the density of the woods, from 10 to 30 meters in rear of the edge of the woods. The trees and bushes are kept on this width, or simply stripped on the lower parts to open up the view. A line of leafless abatis is established (so as not to interfere with the firing), which may be interwoven with barb wire.

(*b*) In a very thick, dense wood, where the clearing up of from 10 to 30 meters from the edge would necessitate heavy work, put the fire line on the edge itself (from 2 to 4 meters; in the ditches which one often finds on the edges of woods). Create in front at 100 meters a line of obstacles, wire entanglement, abatis, stretched wire. Behind the strip of woods, which forms a mask, make a track of 4 to 6 meters, and dig there the trenches.

On account of the presence of roots and of the possibility of defilading the relief, the parapet may be raised by an additional 2 feet 8 inches to 3 feet 4 inches, which gives a better field of fire over the brush and the abatis.

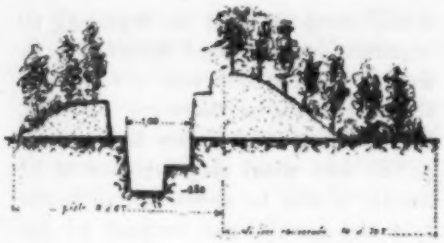

FIG. 30.—Trench in wood, with strong relief.

It is useful to create in places paradoses which protect against back bursts of projectiles.

When the terrain is rocky, the roots are numerous, the woods very abundant, the parapet and the parados may be constructed by means of mattresses of earth between two layers of poles. Sheds may be built, traverses and light shelters with the same materials.

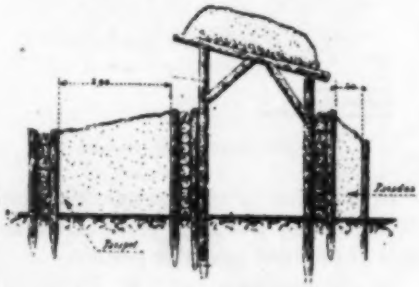

FIG. 31.—Raised entrenchment.

52. *Second Case: Organization of the Crest in Front of the Edge of the Woods.*—The edge has no field of fire, or the wood is narrow and easy to locate for the hostile artillery. The fire line must then be carried forward 50 to 100 meters. Install on the edge of the woods, trenches and abatis for supports and the close defense, according to the same principles as above.

(*a*) *Trace of the organization on the edge of the woods* (principal fire line of the first case, support line of the second case).

The line of abatis will be organized all along the edge of the wood. If time is lacking, the abatis is replaced by wire wound about and stretched between the trees of the edge of the wood. Around the elements of trench, passages for counter attack will be arranged, care being taken to sweep these passages by the fire of an element of trench or of a machine gun.

The salients, the debouching points of roads, the probable points of passage of the enemy, will be first occupied.

The salients will permit flanking the intervals by powerful fire (machine guns, when necessary) in front of the abatis. If the woods present a straight and continuous edge, it will be necessary to post in front of the woods, at some meters, shelters for machine guns or blockhouses, concealed by branches or by a very low relief or simply an element of tenailled trench so as to permit perfect flanking of the edges of the woods.

Progressively, the organization is completed by fire crests in the intervals themselves, so as to make the front impregnable.

Approaches defiladed, or paths, are arranged to connect the shelters with the fire trenches. In rear of the possible lines of approach of the enemy, make ambuscades; trenches enfilading roads at points where lateral obstacles will force the enemy to keep in them. Pits for double sentinels are established in front of the abatis of the edge of the wood. They are connected with each other and with the trenches by *chemins de ronde* of 2 or 3 meters, straight, so as to permit rapid and easy communication (Fig. 32).

(*b*) *Organization in woods.* — Occupy the natural clear spaces, the big gulleys or ravines situated in the interior, to create a crest of fire. The defense of this line is based on the employment of powerful flank fire, with very solid accessory defenses, to make up for a very short field of fire.

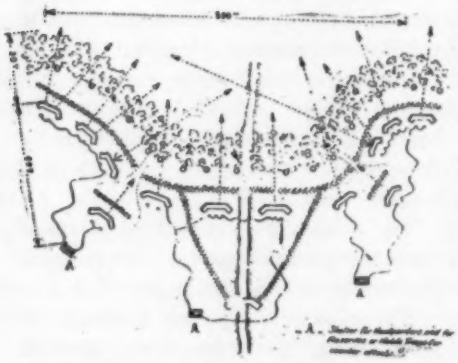

FIG. 32.—Organization of the edge of a wood.

Cut the line out, if it does not exist, being careful to leave enough trees so that the vertical aspect of the wood does not change (airplanes), but clearing away so that the defenders can see the enemy for at least 60 meters to their front. The trace of the clearing is either a straight line; tenailled or stepped abatis at the opposite edge make powerful accessory defenses if barb wire is woven through them. *Make ambuscades swept by machine guns; nail metal trellis to the trees.*

Make passages in echelon for counter attacks. Watch the line of obstacles from sentinel pits (Fig. 33).

The support lines of organized positions along the edges of woods are arranged in the woods upon the same principles.

Fig. 34 gives an example of the organization of the edges of a wood.

If the wood is of great dimensions, it may comprise from the beginning an organization of spaced centers of resistance whose intervals are formed almost entirely of accessory defenses. But when the two parties are near together, and when surprises are to be feared, it will be necessary, to better hold the terrain and because of the difficulty of seeing, to create intermediate strong points and to strengthen them progressively until the intervals attain little by little a degree of solidity comparable to that of the centers of resistance.

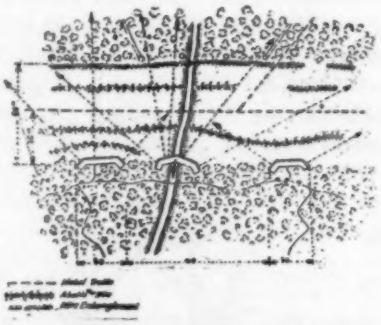

FIG. 33.—Defense in woods.

In the war of movement this plan of organizing will be approximated, as well as the time available permits.

53. *Organization of a Defile.* — Bridges, fords, roads passing through villages, through woods, etc., are considered as defiles.

In mountainous country, this terrain is reserved for a valley with steep, almost inaccessible sides.

This last is the kind of defile we are now going to consider.

According to the situation, the defense may be made in front, in rear, or inside of the defile.

54. *Defense in Front.*—Purpose: To keep the passage of the defile open (advance guard, rear guard).

To protect the exit and its vicinity from hostile artillery fire.—The defense is made on the arc of a circle so as to keep under infantry fire all the positions favorable to the deployment of hostile artillery, on heights dominating the exit of the defile. The distance of the defense from the line of strong points to the opening of the defile varies according to the terrain from 3,000 to 6,000 meters. *There are no support positions* (lack of space), but at the entrance there should be a barrier organized to cover the retreat of the last troops (when necessary).

Very strong wings.—Defense and barricade of all lateral routes, to prevent turning movements. Prepare measures of destruction (in a retreat march) to block up debouching points.

55. *Defense in Rear.*—Purpose: To prevent the enemy's debouching by crushing his columns as fast as they present themselves. To this end his emplacement must be restricted, and *on this emplacement must be directed a concentration of powerful convergent, continuous fire.*

Therefore, put the infantry positions within good rifle range of the mouth of the valley. Place the batteries of artillery so that they cannot be seen from the heights around the defile.

Positions must be solidly supported

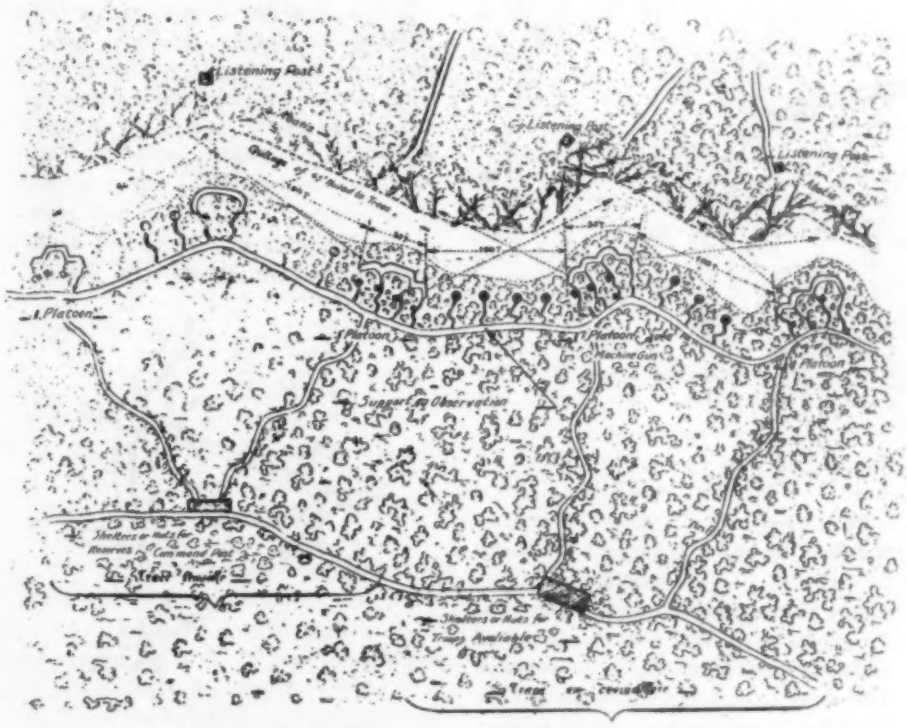

FIG. 34.—Defensive organization of the edge of a wood.

by flanks on high points. Avoid being turned.

Fig. 35 gives an example of the defense organization of a defile.

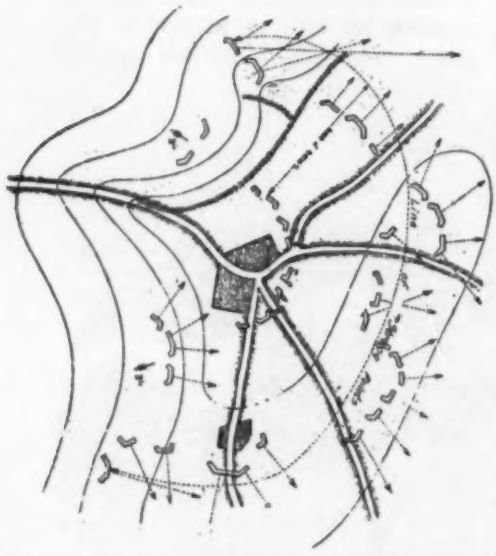

Fig. 35.—Defense of a defile in front.

56. *Defense on the Inside.*—Purpose: To complete the defense in front, serve as a second line of resistance or as an advanced position, hinder the march of the enemy by accessory defenses placed under an intense fire from the trenches. The firing line is placed in rear of the obstacles, so as to have a front superior to that of the enemy, either by carrying the flanks forward and echeloning them on the slopes or by occupying a point where the defile broadens out (secondary valley).

Establish the trenches on the summit of steep slopes on the military crests, for they generally have little to fear from the hostile artillery.

Assure the mutual flanking of the strong points. Watch out for and guard all secondary passages.

57. *Defensive Organization of a Stream Crossing.*—According to the situation, the defense can be made in rear or in front. This special organization is called "Bridge-head."

58. *Defense in Rear.*—Admissible procedure in case of absolute defensive, when there are no debouching points on the other side of the stream.

Watch along the stream, with mobile detachments (with machine guns), which occupy elements of trench and watch the debouching points across the river. Destroy all means of passage along a great length. Assemble the main body at a certain distance in rear so as to bring it rapidly to any point where the enemy may be caught in the act of passing the stream (Fig. 36).

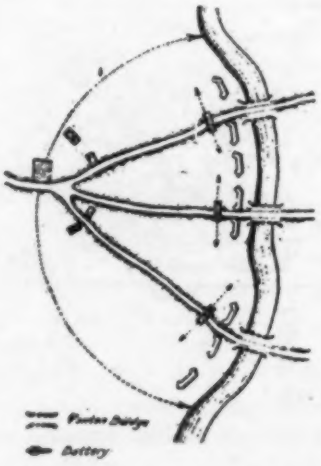

Fig. 36.—Defense of a passage in rear.

59. *Defense in Front.*—Procedure employed to construct a bridge-road. The same defensive organization covers several points, generally at 300 or 400 meters apart. A bridge-head should satisfy the following conditions:

(1) Cover the troops in the vicinity of the bridge against hostile fire. To this end, occupy the heights or emplacements which hold on fire the positions

favorable for hostile artillery's bombardment of the bridge. Considering the range of heavy cannon and howitzers, it would be well to extend this line of supports to 5,000 and even 6,000 meters from the bridge (Fig. 37).

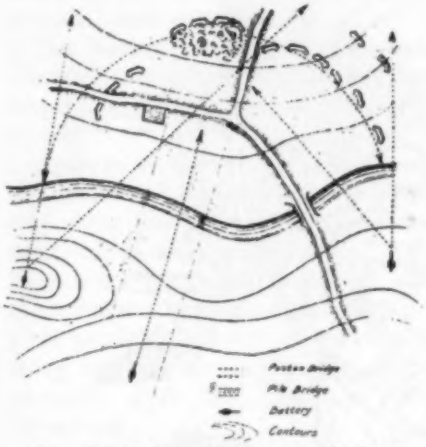

FIG. 37.—Defense of a passage in front.

(NOTE.—In the offensive in Picardy, the heavy long-range artillery destroyed points of passage for enemy at 12 and 15 kilometers.)

(2) But the troops given the defense of the bridge-head are often insufficient.

The development of the position must therefore be in relation to the strength of the force defending it.

The distance of the bridge-head must often be as near the bridge as 3,000 meters.

FIG. 38.—Bridge-head in a bend.

Batteries will be placed on the friendly side to support the strong points of the wings.

They must be able to act likewise on the interior of the bridge-head.

(3) Make solid strong points at the entrance to each passage. Bridge-heads are advantageously placed in the re-entrant bends of streams. Their defense with two arms against one is then easy to obtain (Fig. 38).

CONCLUSION

60. Examples of the present war abound which prove the strength of resistance of defensive fortifications, held by a determined garrison. This strength, joined to the power of armament, is such that it may be said that troops which are well commanded, which feel themselves well supported, which the commander keeps well informed and looks out for, is capable of unlimited resistance. Mediocre strong points, submitted to frightful bombardments and to furious and repeated attacks, have held victoriously, while others, better constructed and prepared, fell prematurely because the defenders had not the necessary confidence in themselves, in their neighbors, or in ultimate triumph.

In November of 1914, the Germans having made a lodgment at Vigneules-Hâttonchâtel on the heights of the Meuse, tried to force the passage of the Meuse. A battalion of a French reserve regiment, energetically commanded, occupied, with one section of machine guns, in the Chevaliers Woods (southeast of Verdun), a defensive organization formed of elements of kneeling trenches hastily constructed, and having in their front only three lines of wire concealed at from 30 to 100 yards.

(The defensive organization of the Chevaliers Woods, occupied by a division, is given in Fig. 39).

munition, the French battalion had instructions to hold to the last man.

The Germans came on in columns of

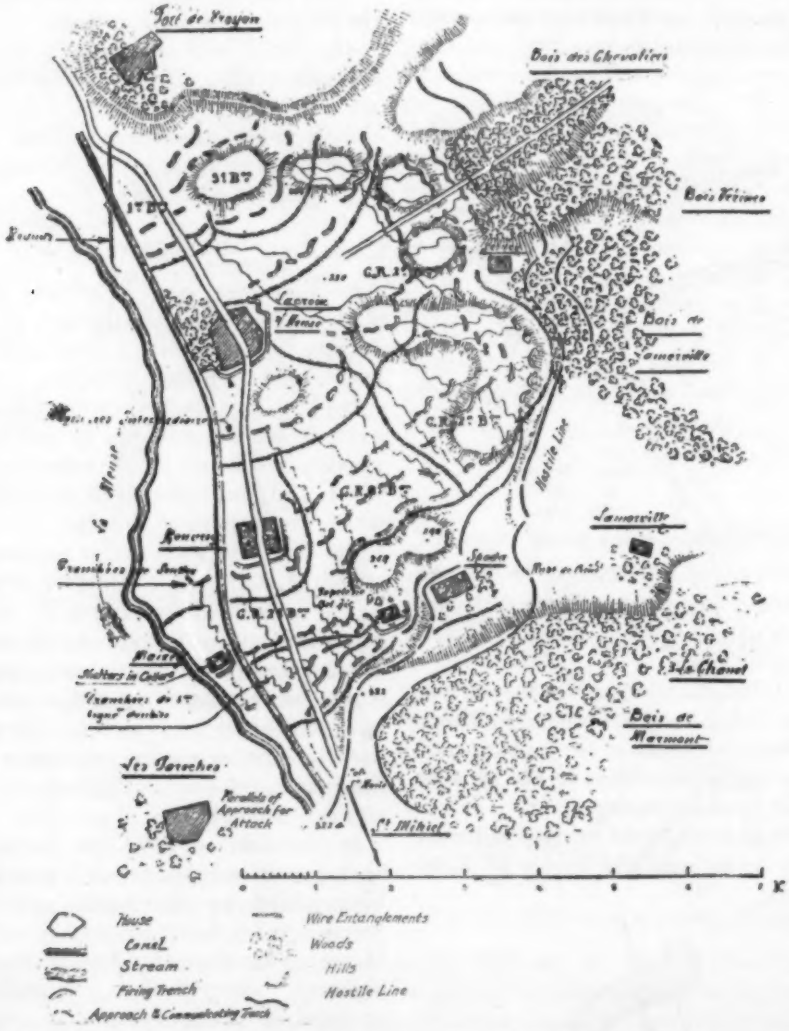

FIG. 39.—Defensive organization of the sector Chevaliers Maizey Woods, southeast of Verdun.

A night attack was launched by four German regiments, commencing at 10 p. m. and lasting until 4 a. m. the next morning. Provided with plentiful am-

fours by the forest paths, yelling, preceded by flare bombs.

For six hours the rattle of fire from the French trenches was continuous. A

few Germans reached the French lines and were captured. At daybreak the four German regiments retreated, leaving 800 men killed and wounded. These men lay strewn for the most part over a zone between 400 and 450 meters in front of the French trenches. The French battalion lost 80 men.

One thousand men well supplied, well officered, energetically commanded, had stopped an attack twelve times as strong as they.

Again in November, 1914, at Ypres, the French line of attack was stopped at 300 yards from the enemy trenches, from which came a deadly fire. The Frenchmen piled into shell-holes and old trenches; badly punished, they replied poorly to the fire of the enemy, firing into the air and only breaking branches over the heads of the Bavarians.

Two French infantrymen succeeded in lodging themselves in a hole in front of their line. One of them settled himself so as to give a flank fire. Without changing the aspect of the front of his shot-hole toward the enemy, he arranged a loophole in the side. He then waited, commencing his fire when he got a target almost to his right. He then commenced to shoot from right towards the left whenever a head appeared. The Bavarians could not locate the man. They doubled their fire on the French line, then, becoming more prudent, took off their helmets and only took hasty peeps over the parapet. Then they began to shoot high and break branches over the heads of the French soldiers.

During this time the two French sharpshooters, alternating in shooting and in improving their hole, had made room for two more; these two came up, and a trench was commenced. Finally, when the trench was big enough, a noncommissioned officer and fifteen men reached it with a rush.

In front, the fire of the German trench appeared silenced; calm settled on this part of the battlefield and a truce seemed established.

Toward midday, suddenly the group of Frenchmen sprang up; in two rushes at full speed over open ground, they reached an old abandoned French fortification 30 meters from the enemy. The Germans, surprised, did not fire until the last moment; two men were wounded. All the rest of the day this small group remained there (only one man wounded). The Bavarians dared not chase them out.

At night, under the protection of this group, the whole company glided forward; they dug silently, with rifles alongside. At daybreak the Germans found a trench dug under their very noses.

These two examples, taken from a hundred, the thousand episodes of the Battle of Verdun, where the development of the mechanical power of destruction is paralleled by the resisting capability of the soldier spirit.

This spirit, when the last word is spoken, will remain superior to the effects of matter, and confirm this truth victoriously announced:

No inch of ground should be voluntarily abandoned, whatever may be the circumstances, and troops, even though surrounded, must resist to the last man, without retreating; the sacrifice on the part of each man itself being the condition of victory.

Course in Rifle Training

By Lieut. Colonel W. H. Whigam, 1st Illinois Cavalry

HEREWITH is a memorandum of a rifle course used on the Mexican border last year. It was approved by General Parker. It is on radically different lines from our Firing Regulations, which, I believe, are not up to date.

It is thought that the ability to hit a small object at 100 or 200 yards is of more value than the ability to hit the target once in a while at 1,000 yards, which is more than the average man can do. In my opinion, 300 yards are far enough for specially directed single shots. It has been found by actual trial that a squad of good holders at 300 yards could make a higher aggregate score at 600 by firing together at will, following instructions as to sight-setting for range, etc., than a squad of men of apparently the same ability firing singly at 600 yards. I take this to be a psychological result. The memorandum is sent as a basis for discussion later.

In a short time thousands of young men will be instructed in rifle firing. It is an extremely live topic.

1. Aiming, sighting and position drills, supplemented by Hollifield tube.

2. Range firing: .22-caliber; 50-foot range.

Positions: Prone, sitting, kneeling, standing. Qualifications: Average of 20 at four positions. Object: Setting sights, holding, aiming, squeezing. Emphasize prone and kneeling positions.

3. Range firing: .30-caliber; 50-foot range.

Positions: Prone, sitting, kneeling, standing. Qualifications: Average of 20 at four positions. Object: In addition to above to acquire confidence in firing full-charge ammunition.

4. Range firing: 100, 200, 300, 500 yards.

Positions: All four at 100 yards. At 200, 300, 500 yards prone.

Qualifications: Practice course average of 20 at four positions.

Record practice: Kneeling at 100 yards. Prone at 200, 300, and 500 yards.

Score: At 100.....22
At 200–300.....23–22
At 500.....23

Kinds of fire: Rapid, quick and slow at all targets and ranges.

Targets: "A" and "B," the latter for use at 300 yards and 500 yards.

Platoon firing: At each of these ranges at special targets. Each platoon to fire rounds at each range.

5. Field firing at unknown distance, making use of accidents of ground. Sandbags, trenches, trees, stumps, etc. Use specially constructed targets.

6. Special selected soldiers to be trained at long-range work. Should have telescope sights for the best men.

Observations

1. Keep soldier's confidence by keeping him on target at all times.

2. The 2d and 3d courses are such that the soldier can see the hits from the firing line. This is a great advantage in firing subsequent shots.

3. No butts or backstops are required in course 2. A hillside will do for course 3.

4. No markers are required for courses 2 and 3.

5. No trouble to handle 100 men on firing line in course 2 or 3.

6. Close shooting at short range is more desirable today than scattered firing at long range. Long-range firing will be volley firing.

7. Machine-gun fire, and by a few experts selected.

8. Our present course is based on making all men experts—an impossibility.

9. The man who can hit the bull's-eye at 300 yards can (if he has mastered the essentials: aiming, holding, trigger squeeze) hit the bull's-eye at 1,000 yards.

The reason for erratic shooting at 600 yards and beyond is faulty knowledge of windage and atmospheric conditions. From 600 yards on, the firing of a large majority for men does not give a high individual score, but the combined score, say, of a squad, gives a highly desirable dispersion.

10. Knowledge of windage, change in atmosphere, etc., are only mastered by a few, and even the high-grade shot, especially the expert, changes his windage and elevation after the first shot on information displayed at the target. In service all shots are first shots. The principle of windage can be taught in courses 2 and 3 by means of the addition of an extra bull's-eye. The one to be hit is covered. Confidence that the soldier can hit the target is what is desirable; then confine his individual shooting to those ranges where proper instruction will bring this about. In fact, emphasize his confidence. It is well known to those familiar with the handling of a large number of men that more men are discouraged in firing at 600 yards and beyond than the number who so keep their confidence that they can shoot well.

11. You can have your men complete the courses at 100, 200, 300 and 500 yards and leave the range full of confidence.

Gases in Warfare[1]

By Colonel John Q. Tilson

THE SPEAKER. Under an order of the House the gentleman from Connecticut (Mr. Tilson) is permitted to proceed for one hour on the subject of gases used in trenches.

. . . . . .

MR. TILSON. Mr. Speaker, before beginning my remarks I wish to correct, to some extent, an impression inadvertently given when leave to address the House was granted me two days ago. It was stated broadly that I was to speak on the subject of aeronautics. Aeronautics come in and play a very prominent part in what I have to say, but I wish to confine my remarks to the possibilities of fighting in and from aircraft, which is in some respects a continuation of what I said the other day about the use of weapons in and from the air.

I wish to state in the first place that I am not an advocate of frightfulness and that I am opposed to the use of any means of warfare not recognized by the latest and highest advancement of international law. (Applause.) I should deprecate a reversion to more primitive methods and should not agree to it except it should chance to be against an enemy who first employed those methods.

MR. GARNER. Will the gentleman yield just there?

MR. TILSON. Yes.

MR. GARNER. Does the gentleman mean to say that he would use the same methods that his enemy used?

MR. TILSON. I did not say that I would use all the methods that the enemy used, but this will illustrate what I meant to say. Suppose that another gentleman and myself were to agree to settle matters in a fight with the weapons that nature gave us, and we were proceeding in that fashion. If the other fellow should draw a small knife and begin to carve my person, I should not continue to pummel him with my fists, but if I had a larger knife I should use it. (Applause.)

We did not begin this war. We confidently expect to finish it. In doing so we may be forced to use the same means used by the enemy and go him one better. In fact, we must use the weapons the enemy has forced into our hands.

Some of the things I shall refer to are so vile and horrible that I feel like promising the House that when we have won this war by these means and others, if it is necessary to atone for the unpleasant things I have brought to your attention, including the horrible weapons heretofore presented and some things I should mention today, such as noxious gases and the like, if you will promise to forgive me for all this I agree that in that peaceful day I shall try to rival the Queen of Sheba in dispensing aromatic perfumes. I shall agree to bring into the House a whole drug store of cosmetics. I shall try to laden the air with attar of roses. I agree to release in the House a flock of turtle-doves and stand treat to the whole membership of the House on grape juice. (Applause.)

[1] Extracts from speech in the House of Representatives, June 27, 1917.

The foundation of what I have to say today is aviation. Long before we became engaged in this war I was one of those who raised my feeble voice in this House and elsewhere in favor of preparedness along the line of aviation. I always urged the largest appropriations that the executive department believed could be spent advantageously, and was ready to vote more if the officials in charge thought they could use it, because I believe it the most important agency for us to develop for our national defense. I even advocated on one occasion that the Post Office Department in its great work should use these machines more largely, not only because it would be a useful vehicle for carrying important mail matter rapidly, but because of the impetus it would give to the development of aviation which could eventually be used in war if need be.

Since our entry into this war I have observed every report coming from the other side, and I am more firmly convinced than ever that our road to victory is through the air. (Applause.) I do not mean by that that we shall simply gain superiority, but we must have complete supremacy, and that, as I understand it, is the purpose of the War Department today. It will require a large sum of money. Mr. Howard E. Coffin, chairman of the advisory committee of the Council of National Defense, makes a suggestion of $600,000,000, and I am for that. (Applause.) Mr. Hawley, of the Aero Club, favors $1,000,000,000, and I believe we shall come to that very soon. If we do spend a billion dollars, or two billions, for that matter, and thereby both win the war and save a million precious lives of our young men, those staggering sums will be a mere bagatelle. (Applause.)

Let us take into consideration the magnitude of some of the problems we have before us. When it is attempted to send millions of men to fight out this war in the trenches, the difficulty of the transportation problem of the men alone is not small. Then if we add to this the equipment and all the necessary paraphernalia to wage a war that we must carry along and constantly increase, the evergrowing amount of ammunition that we must send over, the steady stream of food that must never cease to flow, the immensity of the problem will be appreciated. All you need to do is to sit down, take a pencil, and begin to figure out the amount of transportation necessary for all these things, say, for 2,000,000 men, and you can see one of the difficulties in the way. Even 2,000,000 additional men against an intrenched foe might not turn the scale, and the millions might have to be several times increased. I believe, however, that if we could have a hundred thousand men in the air it would make such an overwhelming fleet that it would blind the eyes of our enemy and carry the war itself far over the trenches into the enemy's territory. After all, gentlemen, complete military victories are seldom won on your own territory. To win out you must take the offensive and carry the war home to the other fellow.

Germany has used psychology in this war to a great extent. Great Britain and France have used it scarcely at all. We all recall how, in the early days of the war, while Belgian forts were being pounded to atoms and fair Belgium herself was being devastated, we heard on every tongue and read in every news-

paper of the wonderful deeds of the 42-centimeter guns. No one outside of Germany had heard or thought of such guns being used as semi-mobile guns. It appealed to the imagination. Miniatures were worn as badges on the breasts of fair women and old men in Germany, while the real article pounded its way almost to the gates of Paris.

Next came the Zeppelin raids. The total aggregate damage done was not large, comparatively, but it struck terror to the hearts of the people of England. We are compelled today to write down the Zeppelin as a practical failure when considered as an offensive weapon of warfare; at any rate, that it does not compensate for the great cost, but the psychological effect was considerable.

Even the sly, deadly U-boat was utilized in the same way. How dramatically that unspeakable tragedy of the *Lusitania* was staged! Semi-official warning was given by advertising in the papers and otherwise advising people not to go on that ship. It was all too horrible for the average American mind to visualize as a possibility. It was thought to be so horrible that it was hardly observed, and certainly not heeded, by our people.

Then that fatal day at Ypres, after long and careful preparation, 50 tons of chlorine gas to a mile of trench were turned loose opposite that sector of the line held by the gallant Canadians. Twenty-five per cent of those brave fellows were killed and the whole line terrorized for a time.

Air supremacy, as I say, is necessary to carry out the plan I have in mind of ending this war with the minimum loss of American lives, and we can secure it. In the first place, it takes men of superb courage and daring. We have the men of that kind. The aeroplane is a Yankee invention. The eagle is an American institution. The air is ours by right. We can make it so by might. (Applause.) Such a program will require a considerable amount of money. Fortunately—and I do not say it boastingly—we have the money. If by the expenditure of money in that way we can serve the purpose better, and at the same time save sending millions of our young men to the trenches, then it is worth all it may cost.

Now a word as to the advancement made in aviation before I proceed to another part of my subject. I shall not attempt to go into a history of aeronautics; that is familiar to all and not necessary to the matter that I have in hand. At the beginning of the war each side had a few aeroplanes. The subject had appealed to the imaginative Frenchman more than it had to us or to the English. So France had quite a number. Germany, of course, following out her practice of thorough preparedness in everything, was well prepared with aeroplanes. At the Battle of the Marne aeroplanes cut a considerable figure. The Germans had the old Taube machine and the French had the old Nieuport and others. These machines made something like 70 or 80 miles an hour. At once both sides set about developing this art, and very soon they were turning out machines on both sides that made very much in excess of those figures. First came the German Fokker, and gained superiority for the Germans. Then the Nieuport and other French machines were improved, and so it has gone, with superiority first going to one side and then to the other. Both sides now claim to have machines

that will make the incredible speed of 140 miles an hour and that will climb in the air 10,000 feet in 13 minutes. It is hoped to make it in 10 minutes very soon.

Then the sizes of the machines have been greatly increased. The old machine was made to carry one man or two at the most, and some thought that was the limit of the size of aeroplanes. The development in size has gone on until today larger machines are flying than ever were thought possible. Today smaller ones than any practical constructor dreamed of are being successfully flown. Take the big machines of the Handley-Page type, in which eleven men have flown from London to Rome in the night time. Such a machine is so large that it can take two little aeroplanes with their aviators on the wings, go up in the air 10,000 feet, and launch the small machines from the wings of the big one. That feat actually has been done. A machine of this larger type, which it is necessary to fly lower and which now usually flies at night, when we are able to take and hold complete supremacy of the air we shall be able to use in the daytime. The weapons that can be used from aircraft are practically all of those that can be used on the land, up to and including the Davis 3-inch recoilless gun, and a number that can be used in no other way, as I shall show in the case of certain drop bombs. I have on former occasions spoken of the use of pistols, rifles, and machine guns from aeroplanes. The machine gun, especially, is extremely important, but I shall not repeat what I have said on the subject. I also referred to the use from aeroplanes of fragmentation bombs, especially the Barlow bomb. At that time I told the House that this bomb had not yet received its final test. The test was held at the Hampton grounds a few days ago. It was dropped from the aeroplanes at great heights, so as to thoroughly test it, especially as to accuracy and destructiveness. I do not think it advisable to give you the official figures, but I am permitted to say that the results were highly satisfactory in every respect, and that the officers having the matter in charge are quite enthusiastic. (Applause.) This bomb, in my opinion, is sure to be heard from before the war is over. Not only is great credit due to the inventive genius of Mr. Barlow, but to the Ordnance Department, and especially to the commandant and other officials of Frankford Arsenal, under whose special guidance this young man's fertile ideas were so satisfactorily worked out. I am informed that an up-to-date corporation of patriotic men have made all preparations necessary to manufacture these bombs in large quantities under whatever arrangement the Government may deem necessary and proper.

MR. CAMPBELL of Kansas. Will the gentleman yield?

MR. TILSON. I yield to the gentleman.

MR. CAMPBELL of Kansas. Some time ago there was a great deal of talk in administration circles about the espionage bill, with the view largely to preventing the notifying of the enemy of plans of the administration and of this Government. I note now, however, that much talk has been indulged in in administration circles that has gotten into the newspapers with respect to the plans of our Government as to the conduct of the war. Does not the

gentleman think that already much of value to the enemy has been disclosed with respect to the use of the aeroplane and the bomb in connection with it?

MR. TILSON. Probably so, and I would say it was absolutely so, if it were not for the fact that we are almost certain that everything that has been revealed, certainly through the newspapers or through the wide circulation of the *Congressional Record,* is already known in Germany. I am sure that all I have presented in connection with the bomb——

MR. CAMPBELL of Kansas. I do not refer to what the gentleman has stated on a former occasion and now. But I have been wondering if there was a purpose on the part of the War Department to disclose to the world and to the enemy just what our plans are.

MR. TILSON. I do not believe so. I thing a certain amount of publicity as to general plans is absolutely necessary, because those matters have got to come before this House for appropriations, and this House is going to insist on knowing a certain amount of detail in regard to them. I believe that what has been given out is no more than what would be required in this House before enormous appropriations of that kind would be made.

Now as my time is going I wish to refer to one additional means of fighting from the air. In addition to the fragmentation bombs there is a large field to which I have not heretofore referred, and that is gas bombs. Fighting with gas is worthy of an entire chapter by itself. The use of gas as a weapon of defense, like many of the other weapons now in common use in the armies of Europe, such as the catapult, flame projector, trench knife, and sling, is an inheritance from the early ages amplified, improved, and made more destructive by the aid of modern science.

The first recorded effort to overcome the enemy by the generation of poisonous and suffocating gases seems to have been in the wars of the Athenians and Spartans (431 to 404 B. C.), when in besieging the cities of Platea and Belium the Spartans saturated wood with pitch and sulphur and burnt it under the walls of these cities in the hopes of choking the defenders and rendering the assault less difficult. They also melted pitch, charcoal and sulphur together in cauldrons and blew the fumes over the defenders' lines by means of bellows.

"Greek fire" was used by the Byzantine Greeks under Constantine about 673 A. D. to destroy the Saracens, and Saracens in turn used it as a weapon of defense against the Christians during the crusades. This Greek fire had the double advantage of being not only inflammable but also generating during the process of combustion clouds of dense blinding smoke and gas of an asphyxiating character. Its chemical composition was supposed to be a mixture of quicklime, petroleum, sulphur, and such other inflammable substances as pitch, resin, etc. Upon the addition of water the slaking process which the quicklime underwent generated enough heat to ignite the petroleum, which in turn ignited the resin, pitch, and sulphur. This flaming mixture was delivered against the enemy by means of phantastic syringes in the shape of dragons and other monsters with wide jaws.

The first use of gas in modern warfare occurred April 22, 1915, when the

Germans liberated great clouds of gas against the allied trenches near Ypres with a resulting complete demoralization of the troops and a large number of casualties.

Coincident with the use of the "gas cloud" the Germans began to use gas also in bombs, hand grenades, and shells. From this beginning, gas has now become recognized as one of the accepted arms of the military service, and is being used very extensively in all armies, especially in the form of gas shells.

Before proceeding to speak of the different kinds of gases, or the methods of attack with gases, I think I should first address myself to the defense against gases, because that is the way, mind you, in which we approach it. The gases were used against the Canadian troops contrary to The Hague convention, but are now generally used, not only by the enemy but by the allies themselves. The first problem that the allies had to face was defense against it. As I have stated, on April 22, 1915, opposite the Ypres salient the Germans turned loose 50 tons of chlorine gas to the mile of front occupied. Chlorine gas is two and one-half times as heavy as air. It apparently rolls along the ground in a greenish-yellow cloud. As soon as it reaches the vicinity of the dugouts, being heavier than air, it immediately goes down into the dugout and remains there until removed. The allies had to meet this problem, and they began meeting it at once. Some Germans were captured who had gas masks, and in a few days every woman in France who could find any material out of which to make these things was making gas masks—imperfect, crude things at first, but they improved rapidly. A gas mask is absolutely necessary for the life of anyone who is exposed to those deadly gases.

I have brought here today three types of masks that are used in defense against noxious gases. With his consent, I am going to ask the gentleman from Ohio, Captain Heintz, who is always a good soldier, if he will now volunteer as a victim and try on one of these masks for me. (Applause.)

While the captain is adjusting the mask I will speak briefly of the other two types. Two of the page boys have consented to put on the other two types. This one (indicating) is the British reserve mask. It must go under the coat in this way (indicating). Otherwise it is of no value.

You will notice the difficulty with this type. This air valve has the one end in the mouth, so that the person using it must be able to breathe through the nose, because this valve only works outwardly. Thus, stopping the mouth with the outward valve makes it necessary to use the nose for breathing in order to get any breath at all. The air, of course, goes through this fabric which is saturated with the neutralizing chemical. This is the type used by the French (indicating). It has the advantage of simplicity. You can breathe either through the mouth or through the nose, but the breath must go out and in through the fabric. There is no outlet at all. This one (the British reserve mask) is not absolutely proof against gas for a long period. Therefore it is used only in reserve by men 4 or 5 miles back of the lines. The British in the trenches most liable to be exposed to gas are required to have this type (the box respirator type). In

fact, it is now required that the men shall have both of these.

This mask that the gentleman from Ohio is now putting on is adapted from one that was first made by the British which in turn they adapted from one captured from the Germans. It has been improved to some extent as time has gone on. We think we have improved it in those that we have been manufacturing for our own troops. This one that the gentleman from Ohio has on is absolutely proof against gas for ten hours, it is said. When the gentleman from Ohio tried it on the other day and I was saying to a bystander that a man could live in it from seven to eight hours, as soon as the captain got that thing out of his mouth he protested that he would not like to try to live seven or eight hours in that mask. (Laughter.) It is, however, absolutely proof against these deadly gases, which after all is the important matter.

This (indicating) is a canister containing the chemicals. Here is the same rubber valve that the other has, that you breathe through outwardly. It has a pair of clampers on the nose, so that the man cannot breathe through his nose at all.

In the reserve mask he must breathe through his nose. In this one a man cannot breathe through his nose at all, but must breathe through his mouth. There are some men who cannot breathe through the nose, but all men, so far as I know, can breathe through the mouth. This one—box respirator type—is absolutely proof against any gas that has as yet been invented.

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Mr. Humphreys. How do the ones that the pages have on protect?

Mr. Tilson. They are saturated with chemicals and put down over the head so that you cannot get any breath except air that passes through the fabric saturated with the chemical, so that the gas is neutralized. It is the same way with the French mask. The fabric is thoroughly saturated with the chemical.

Mr. Britten. How long will that last?

Mr. Tilson. These smaller masks will last in gas three or four hours. This one will last longer. It is figured that a man could live in a deadly gas for ten hours with one of these horrible things on.

. . . . . .

Mr. Tilson. In the English reserve mask a person can live three or four hours. That is all it will last in gas.

Mr. Lenroot. Mr. Speaker, will the gentleman yield?

Mr. Tilson. Yes.

Mr. Lenroot. These chemicals have to be replaced every ten hours, whether they are used or not, have they?

Mr. Tilson. Oh, no. This one that the gentleman from Ohio put on is charged with a chemical, but you do not smell it at all. You have no idea that the chemical is in there, and it does not appear until the deadly gases appear.

Mr. Meeker. Mr. Speaker, will the gentleman yield?

Mr. Tilson. For a question.

Mr. Meeker. How far from the lines can these clouds of gas be seen? How far does the gas carry?

Mr. Tilson. Of course that is not possible of accurate answer. It depends upon the wind conditions, and whether the ground is smooth, and the wind is gentle or strong or all in one

way. Fortunately, on the western front the prevailing winds are from the west, and it gives the Germans a slight disadvantage in cloud gases. It depends upon the amount of gas that you have.

The gentleman understands that it is also used in shells, and it is the purpose to use it more largely. Anyone who gets the supremacy of the air can use it successfully. It can be used in all kinds of containers that can be dropped from the air, which can almost destroy the artillery of the enemy if you drop enough of it to kill or put out the eyes of the gunners. The lachrymatory gases are especially effective against the artillery.

MR. MONDELL. Mr. Chairman, will the gentleman yield?

MR. TILSON. Yes.

MR. MONDELL. Do I understand that the cheaper or emergency masks allow the passage of air through the material of the mask, but exclude the gas?

MR. TILSON. The air, laden with the gas, comes through the mask and is drawn in by the suction of the man's lungs, gas and air mixed. It must go through this fabric, which is saturated with a chemical, and going through it the chemical neutralizes the gas and only the purified air comes through.

MR. MONDELL. Where is the chemical?

MR. TILSON. It is in the mask itself, and if the gentleman will come close enough to it he will be able to smell it. The material itself is saturated.

MR. DOWELL. Mr. Chairman, how long will that mask remain saturated without being used?

MR. TILSON. Indefinitely, practically. If the gentleman will pardon me, I desire to go just a little bit farther in regard to these means of ending the war. I believe that with the combination of all of the arms that we can use from the air, all kinds of guns up to 3-inch, all of these terrible bombs of which I have been speaking and of which I have heretofore brought in several different types, and then these gas bombs which are very deadly as fired now from trench mortars and howitzers, we can do a great deal toward ending the war. I believe that with all these coupled with the increased use of the aeroplane, so that bombs instead of being fired from mortars or howitzers, which is destructive of certain kinds of containers and renders useless certain kinds of very poisonous gases, may be dropped from the aeroplane, we can do much toward making war unbearable.

You can use other and different gases from the aeroplane than you can from the gun. There are now a number of chemists—I could not tell you how many—brilliant chemists, who are working on these problems. It is believed that with the supremacy of the air complete, the use of bombs, including the use of gases—which was forced into the hands of the allies, first being used by their adversaries—may be made the turning element in this whole contest. Think what the effect would be if used against supply depots, if used against troops in reserve, where they are supposed to be resting back of the lines; think what it would mean to have these bombs constantly falling upon them, or, even going farther back, with supremacy of the air back over German territory. Of course I should be in favor of warning them to take away their women, children, and old men from any part of the country that we should have to operate over, a thing,

by the way, which the enemy has not done in the case of the Zeppelins which have gone over England. Having done that, you can realize what kind of terror and destruction might be brought to Germany itself by the use of all kinds of weapons used in aerial warfare, including gas bombs of every type and kind.

MR. WOODYARD. Mr. Chairman, will the gentleman yield?

MR. TILSON. For a question.

MR. WOODYARD. How are we to obtain the results which we all hope for if the Germans should avail themselves of the same means of protecting their soldiers with masks, which I assume they do?

MR. TILSON. We shall have to do it more and carry it farther back, where they will not be equipped with masks.

MR. FARR. Does the gentleman desire to say anything about the facilities we have for the making of aircraft?

MR. TILSON. We have great facilities for the making of aircraft. There is today in this city a meeting of the Society of Automotive Engineers. These men know what is needed and how to get it; they are bringing great comfort to the hearts of those who are wrestling with this problem. There is great satisfaction in the progress being made in aviation, as there is along all of these lines of which I am speaking.

MR. HAMILTON of Michigan. As I understand it, though perhaps I have not been correctly informed, one great difficulty we have had in this country has been the construction of engines of sufficient power, and our difficulty in that respect was illustrated in Mexico.

MR. TILSON. Yes.

MR. HAMILTON of Michigan. Have we overcome that difficulty?

MR. TILSON. We have overcome it, as I am informed and believe.

Just one word now as to the effect of these gases. I was advised by one of my good friends that perhaps I ought not to speak of these terrible things, as it might discourage the young men of the country. I do not believe so. I believe that we should know the worst. I believe that we should know what we are going up against, so that we may nerve ourselves to the task and prepare ourselves to meet it. Gas poisoning is a horrible death, and the net results of these gases are very terrible. Of course we hate to use them, but we do not wish them to be used upon us, and the only way to prevent it is to be prepared to use them ourselves and protect ourselves against their use, and that is what I advocate. It is the reason why I have brought these things here today to show how we must prepare ourselves. (Applause.)

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MR. TILSON. Mr. Speaker, when I suspended, in order that the House might receive the Belgian commission, I was still speaking on the subject of gases and their use in warfare, and especially from aeroplanes. I had finished practically what I had to say on that subject, and am now willing to answer questions in regard to it so far as I can.

MR. ROGERS. Will the gentleman yield?

MR. TILSON. I yield to the gentleman from Massachusetts.

MR. ROGERS. Several officers who have returned to this country from France, and who have had experience in the conditions of trench warfare, have told me that the defense against gases is so complete and thorough on

both sides that by common consent practically the use of gases has been discontinued. Can the gentleman tell us anything about that?

Mr. Tilson. That is probably true as to cloud gases, which, of course, can be used successfully only against the front line of trenches, in which every man must be thoroughly prepared to defend himself against gases. It is our intention to have one of these respirators of the box type with every man, and a reserve mask of the type used by the French and the Belgiums, so that cloud gases will probably not be used much when it is known that everybody is thoroughly prepared against them. The gentleman will note, however, that it is my expectation that these gases will be made use of from aeroplanes a great deal more than they ever have been. They have already been used, and are now being used increasingly in the form of projectiles of glass and steel containing these poisonous gases, and fired from trench mortars and howitzers. They are using those increasingly. My idea is that they will be used still more from aeroplanes when we get supremacy of the air, and that the gases being dropped suddenly from the air, perhaps at some distance back from the front line, the men behind the front line will not be so well prepared and will suffer demoralization and other damage, especially among the artillery.

Mr. Rogers. Is the nature of these gases such that if the bombs containing them are fired from a howitzer or dropped from an aeroplane there will be time to adjust a mask which is actually being carried by the soldier, in time to prevent his being harmed by the explosion of the container of the gas?

Mr. Tilson. There is not time. As a matter of fact, they figure that in order for a man to be sure to protect himself against cloud gases he must be ready to put these masks on in six seconds. The drill in putting on these masks is made as accurate as the manual of arms used by infantry. It is intended to speed up so that a man can put one on, as I say, in six seconds. Even six seconds may be too long with these deadly gases falling from the sky, going out in every direction, and a man getting a whiff of the gas before it is possible to put on his mask. That has happened. I remember one of the party with the British commissioners told of an instance showing the effect of gas shells containing the terribly poisonous gas called phosgen, which, unlike the chlorine or bromine gas, has a delayed action, so that you take it today and die tomorrow. The instance was one where a shell descended and two men got a whiff of the gas. A surgeon, being near, saw that they were exposed to it, and immediately ordered them to the hospital and to bed. They obeyed orders and went off to the hospital, joshing each other that two strong men should be ordered to bed with nothing the matter with them. Before the dawn of the next morning both had died horrible deaths from that awful poison.

Uniforms and Badges[1]

By Major Fred. R. Brown, Infantry

French Army

All arms (except African troops, khaki) dressed in grey-blue ("bleu" horizon) képi or helmet, tunic or greatcoat, trousers or pants, and puttees. Variations noted below. Number of regiment shown on collar patch (of same color as chevron for Active, and white for Territorial Army). Chevron on collar patch mostly represents collar color in previous uniform.

Staff Officers.—Arm-band: Dark blue for brigade; red for division; red, blue, white, with thunderbolt, for corps; red and white, army.

Infantry.—Yellow trouser-piping; dark-blue chevron on grey-blue patch; grenade on helmet.

Chasseurs (Rifles).—As for Infantry, except bugle on helmet, "béret" (Tam o' Shanter), and dressed in iron-grey vice grey-blue.

Cavalry.—Dark-blue piping, yellow leather gaiters, dark-blue collar; patch. Patch-chevrons vary: Cuirassiers, red; Dragoons, white; Chasseurs à Cheval, green; Hussars, light blue; Chasseurs d'Afrique, yellow, shako; Spahis, yellow, sheshia.

German Army

All arms dressed in grey ("feldgrau") cap or covered helmet, tunic (stand and fall collar), greatcoat, trousers or pants, and long boots (worn over or under trousers). Shoulder-strap with regimental number or monogram, edged with various colors or state colors (one-year volunteers). Greatcoats sometimes dark blue. Variations below. Cap-bands often grey colored.

Staff Officers.—Carmine band to cap, broad carmine trouser-stripe.

As above. Edging according to corps.[2] Cap-band red, or grey-covered.

Jäger and Shützen (Rifles).—Dressed in grey-green, with green strap edging, and shako vice helmet. Cap-band red or grey-covered.

Stand-up collar. Lancers (Uhlans) and Hussars wear special cut tunics and special head-dresses. Edging of shoulder-strap varies in color, but Dragoons have single, Cuirassiers double edging. Cap-bands, various.

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[1]References.—Field Almanac, 1917, *Int. Mil. Digest*, and notes prepared by Capt. R. Duckworth Ford, British Army.

[2]White, I, II, XI, X, XII, and Bav.; red, III, IV, XI, XIII, XV, XIX, II Bav.; yellow, V, VI, XVI, XVII, III Bav.; blue, VII, VIII, XVIII, XX, etc.; various XIV; light green, XXI.

French Army	*German Army*
Field Artillery.—Scarlet piping, gaiters; light blue chevron on scarlet patch; grenade and crossed guns on helmet; chevron, in Colonial, violet; Mountain, white; Heavy, grey; Horse, dark blue; Foot, green.	Black piping to collar; red grenade on shoulder-straps; brass buttons (white metal in Guard Corps). Cap-band, black.
Engineers.—Black piping; scarlet chevron on black velvet patch; gaiters.	Black piping to collar; no grenade; white metal buttons; cap-band, black.
Train.—Green piping; red chevron on green patch; gaiters.	Blue edging to collar and tunic; (supply) crimson edging; cap-band, blue.
Medical.—Red piping and red velvet collar patch, with snake and rod badge; rank bars, silver.	Red edges to blue collar patch; cap-band, black.
Veterinary.—Red piping and red velvet collar patch; rank bars, silver.	Red edges to black collar patch.
Interpreters Attached to British Army.—Khaki képi, tunics and trousers. Officers wear olive branch badge on dark blue velvet, and men Sphinx's head on grey-blue collar patch.	Guard regiments wear two 4-inch tabs of braid on either side of collar and white buttons. Shank of side arm tassel shows number of battalion; top and bottom, number of company; 1, white; 2, red; 3, yellow; 4, blue; 5, green. Thus red shank and yellow remainder equals 2d battalion, 3d company.
Flying Corps.—Orange piping; orange chevron on black collar patch.	
Gendarmérie and Military Police.—White piping; narrow white band to képi and white grenade on black collar patch. Generally wear dark blue.	Landwehr wear cross on headdress. Caps now mostly all grey.
Zouaves.—Khaki and khaki-covered sheshia; chevron, dull red.	Cockade on soft front of cap is red, white and black; cockade on cap-band shows state: Prussia, black and white; Bavaria, blue and white; Saxony, green and white; Wurtemberg, red and black; Hesse, red and white; Mecklenburg, red, yellow, blue, etc., etc.
Tirailleurs.—Khaki and khaki-covered sheshia; chevron, light blue.	
Colonial Infantry.—Grey-blue; chevron, scarlet; anchor on képi.	
Foreign Legion.—Grey-blue; chevron, green.	

BADGES OF RANK

French Army		*German Army*	
General—	On lower part of sleeve.	Gold and silver twist, 2 stars.	Shoulder strap.
General de Division (General Lieutenant), 3 small gold stars.[1]		Gold and silver twist, 1 star.	
General de Brigade (General Major), 2 small gold stars.		Gold and silver twist, no star.	
Colonel, 5 gold bars.[2]		Silver twist, 2 stars.	
Lieutenant Colonel, 3 gold and 2 silver bars.		Silver twist, 1 star.	
Major, 4 gold bars.		Silver twist, no stars.	
Captain, 3 gold bars.		Straight silver cord, 2 stars.	
Lieutenant (Oberleutnant), 2 gold bars.		Straight silver cord, 1 star.	
Sous-lieutenant (Leutnant), 1 gold bar.		Straight silver cord, no star.	
Adjutant (W. O.), 1 silver bar, red striped.			
Sergeant-Major (Feldwebel), 2 broad gold bars.		Gold or silver collar lace, button either side.	
Sergeant, 1 broad gold bar.		Plain collar lace, button either side.	
Caporal (Unteroffizier), 2 dark-blue woolen bars.		Collar lace.	
Soldat 1. Cl. (Gefreiter), 1 dark-blue woolen bar.		Button either side of collar.	
Bugler, red, white and blue bar.		Cord "wings" on shoulders.	

THE BRITISH UNIFORM

The new German field uniform, which is immensely popular in Germany, is a great success. While adopting all the advantages of other campaign uniforms, it still has a pre-eminently German appearance, and does not mean any abrupt break with the uniform traditions of the German Army.

Most campaign uniforms have patch pockets. Those on the breast are hard to get at, are crossed at the top by equipment straps, or else those at the bottom, where heavier objects soon find their way, are painfully pressed against the body. Not so the German pocket, which is set in diagonally in the skirt of the blouse or tunic and is placed inside, so that even if bulging full the appearance is good.

The collar is a falling collar which can be turned up for warmth. Except for a few cases, the uncomfortable standing collar is banished.

[1]Generals also wear these stars in front of képi throughout army (otherwise blue képi shows no badge of rank) and double dark blue piping to breeches.

[2]Silver for Cavalry and Chasseurs.

The bars (galons) are about 2 inches long; horizontal for officers, oblique for non-commissioned officers.

The color, field gray and field green, naturally promotes invisibility on their fields of campaign. The American system of insignia, etc., is unknown to the Germans, who secure the differentiation by the color of the buttons, style of cuffs, color of the facings, pipings, and the like.

The colored pipings and facings do not destroy the invisibility, as might be surmised; it might be argued on the contrary that the colors retained adapt themselves to a terrain where the vegetation is never of an entirely uniform color.

The system, while radical enough, is yet immediately intelligible to anyone familiar with the former German uniforms, which are not discarded but reserved for all duty, except campaign and maneuvers.

THE BRITISH UNIFORM

The khaki tunic is built like a shooting coat, with breast pockets and very capacious side pockets which are intended to carry things in. It has a fold-over collar, collared khaki shirt and tie being worn. The material is usually a very strong whipcord or Burberry, of a slightly darker shade than the olive drab of the American Army.

In the line requirements the insignia of rank are usually worn on the cuff of each sleeve. The insignia are as follows:

Second Lieutenant, one ring and one star.

Lieutenant, one ring and two stars.

Captain, two rings and three stars.

Major, three rings and a crown.

Lieutenant-Colonel, four rings, a crown and a star.

Colonel, four rings, a crown and two stars.

General officers, officers of the Guards, and some of the colonial regiments continue to wear the insignia on the shoulder straps.

The insignia of the ranks given above are as indicated, minus the rings. Those of general officers are:

Brigadier General, crossed swords.

Major General, crossed sword and baton, and star.

Lieutenant General, crossed sword and baton, and crown.

General, crossed sword and baton, and crown and star.

Field Marshal, crossed batons within a laurel wreath, and crown above.

General and staff officers may be distinguished by the red band around the cap and by the red tabs on the lapels of the coat. There is also a certain amount of gold braid and embroidery about the cap visor, hence the familiar term "Brass hat."

Noncommissioned officers wear chevrons (point downwards) on the upper *right* arm; lance corporal or acting bombardier, 1; corporal, 2; sergeant, 3; color sergeant, 3 chevrons and crossed colors; staff sergeant, 4 chevrons.

On the lower part of the *left* arm chevrons are worn as "good conduct" badges.

A sergeant major is dressed as an officer, except that he has a crown on the lower part of the right sleeve. There are also badges of proficiency such as crossed rifles for marksmen, a spur for rough-riders, a fleur-de-lys for scouts, etc.

Corps, departmental, and regimental badges are worn on the lapels of the coat.

Spurs are worn by all field officers, including captains who are double-company commanders, except with

undress, when "slacks" (trousers) are worn instead of breeches and boots or puttees.

The Sam Browne belt is habitually worn, except in quarters or at mess.

Saluting.—The regulations require junior officers to salute their seniors. When a party of two or more officers receives a salute, only the senior of the party returns it.

However, all officers acknowledge the salute of officers of an allied army. A British officer salutes a foreign allied officer of equivalent or senior rank, and when there is doubt about the rank of the latter he is given the benefit of it. British officers are required to be even more punctilious about paying compliments to the officers of allied armies than they are to their own confreres.

There appears to be no regulation as to the position of senior and junior officers when walking together in public. A subaltern, for instance, may walk either on the right or left of a field officer.

Regimental social amenities have been practically laid on the shelf for the duration of the war. An officer, newly joining his regiment, is not required or expected to call socially on his colonel. He merely reports, officially, at the orderly room.

The institution of the regimental mess is still maintained. The following usages are generally followed:

1. No smoking in the ante-room during the half-hour immediately preceding dinner.

2. When the commissioned officer enters the ante-room all officers rise, bid him "good evening," and remain standing until he has taken his seat.

3. The commissioned officer leads the way to the mess-room when dinner is announced.

4. When coffee is served, no smoking is indulged in until the commissioned officer has given the signal—by lighting his own cigar or cigarette.

No officer leaves his seat at table before the departure of the commissioned officer—that is to say, the colonel, or in his absence the senior officer present.

One day of the week is usually set aside as guest night, and this is the only occasion when officers may entertain friends at a mess dinner.

Breakfast and luncheon are informal meals.

BELGIAN ARMY

Badges of Rank—Officers

Rank.	On each side of collar of service jacket.	On cap.
Lieutenant General....	2 vertical gold lace stripes; 3 gold stars; gold thunderbolt.	2 vertical gold lace stripes on each side of gold thunderbolt.
Major General.....	2 vertical gold lace stripes; 2 gold stars; gold thunderbolt.	2 vertical gold lace stripes on each side of gold thunderbolt.
Colonel.....	1 vertical gold lace stripe; 3 gold stars.	1 vertical gold lace stripe on each side of gold regimental number or General Staff badge.
Lieutenant Colonel..	1 vertical gold lace stripe; 2 gold stars.	Ditto.
Major.....	1 vertical gold lace stripe; 1 gold star.	Ditto.
Captain.....	3 gold stars.....	Nil.
Lieutenant.....	2 gold stars	Nil.
2nd Lieutenant.....	1 gold star.....	Nil.

Noncommissioned Officers

Warrant Officer, 1 silver star on collar.

Color Sergeant Major, 3 rings of narrow dark brown braiding round cuff.

Sergeant Major, 2 rings of narrow dark brown braiding round cuff and 2 stripes of same material above elbow.

1st Sergeant, 2 rings of narrow dark brown braiding round cuff.

Quartermaster Sergeant, 1 ring of narrow dark brown braiding round cuff and 1 stripe of same material above elbow.

Sergeant, 1 ring or stripe of narrow dark brown braiding on arm below elbow.

Corporal, 1 ring or stripe or broad dark brown or white braid on arm below elbow.

Varied Ground

Good Advice

The following extract from the address delivered to the second class of probationary second lieutenants by Col. J. W. McAndrew is excellent advice to all officers, and especially to the thousands of young Reserve Officers:

This is a big contract that we undertake, and we cannot carry it out without your earnest cooperation and assistance. We shall do our part of the work, but remember that after all it is your work that counts most. Even in times of peace the army officer owes to his country his best efforts. It is his duty and his privilege to attain by hard study and application the highest efficiency possible in his profession. And now more than ever are we called upon to exert ourselves in the service of our country and to put aside everything that interferes in the smallest degree with the rendering of that service to the fullest extent.

There is much hard work before you if you will obtain the results desired in the course here. The time given you is all too short for the ground that must be covered. Officers fitted to command first-class troops cannot be the product of a course of three months' training and instruction, no matter how strenuous it may be. But if you do your part three months are long enough to give you a good insight into the duties of subalterns, and, above all, to give you a safe and solid foundation upon which to build your future efficiency. That is all we can hope to do in three months' time. And if when you leave here you realize that the military profession demands as much from its followers in the way of years of study and effort to attain proficiency as does any other profession of modern times, you will have learned the most valuable lesson we can teach you.

When you consult the schedules of the work that is before you, you will find that it will demand your undivided time and attention. We make no apology for this. We owe it to you that you be given every opportunity here to get a fair start in your profession. Amusements and social diversions must for the time be absolutely subordinated to work. We do not think the course as laid down is unduly strenuous or too severe a task on your mental or physical powers. It is less than that prescribed at the present time for the cadet officers of the British army—a class that corresponds closely to yours. What the young men of an allied nation are doing in their country's service you can do in yours. So I ask you to respond to our efforts, and if you do so we promise to send you to your regiments with a knowledge of your duties that it might not be possible for you to get in a year's service with troops in the field. We shall transform you from a liability to an asset in your regimental organization.

Make up your minds right now that the Army is no place for the time-server or the dilettante. Even before our country was called to arms the time had gone by when a mere performance of the routine duties that fell to your lot would answer the needs of your profession. In the military profession, as in so many other modern professions, not to make progress, not to keep abreast of the best thought of the age, is to go backward. You gentlemen will be called upon to perform a large part in the strenuous work that today is before us. The highest efficiency possible must be your goal. The price that you will pay to attain it is made up of the items of clean living, sobriety, industry, honor, and a wholehearted devotion to your profession. Your country demands this of you, and you must not be satisfied with giving it less.

I feel satisfied that your personal habits are all they should be, or that at

least you have as yet formed none that will militate against your efficiency as an officer. Let me give you a little earnest advice here. The greatest efficiency in your profession can be attained only by complete abstinence from the use of intoxicating liquors or drugs. Even moderate drinking, if there be such a thing, will handicap you as much in the military profession as it does in any of the professions of civil life. Do not be misled in this respect even by the sophistries of some older officers. Your safest course is to avoid altogether the use of intoxicants at any time and in any place.

Another benefit, and that not the smallest you will get from your course here, is the association with comrades of other arms of the service than your own. Esprit in each arm is highly commendable, but the esprit of the Army as a whole is of far greater importance. Do not cultivate the former at the expense of the latter. If you do, you are injuring the service. We must not forget that the Army does not consist of one arm only and that no one arm has a monopoly or even more than its share of military virtues. The efficiency of an army can rise no higher than the efficiency of its component parts. You owe it to the service and to your country to do your part to make all arms of the service equally efficient. Do not think that your interests lie solely in the arm to which you have been assigned. Such a view is a narrow one that militates strongly against efficiency. The officer who lets personal interests or an exaggerated idea of the importance of his arm govern his actions is unworthy to wear the uniform.

Join at once the association of the arm to which you have been assigned and do all in your power to promote its interests. Lack of interest in such associations shows lack of sincere interest in the service as a whole.

Keep out of debt just as far as it is possible for you to do so. Usually an army officer's credit is good anywhere, and therein lies a big temptation. You have been told just what it is necessary for you to purchase and where the necessary purchases can be made with the greatest economy. Do not be tempted beyond this unless you are amply provided with means to purchase and pay cash for other articles. Tradespeople may advise you otherwise, but if you follow their advice and not that of the officers over you, you are bound to regret it in the end. Remember that a report made to your superiors by the tradespeople of debts due and unpaid goes on your record.

Our Military System

The formal statement of the President, published recently, of the regulations for enforcing the selective draft law may be taken as the last step in the formation of a new military policy for the United States. The President lays emphasis upon the provisions for an equal and just selection. There will be no favoritism, there will be no exemptions because of wealth or social standing. It is worth while to compare our new system with that which Major General Upton so strongly condemned in his book on "The Military Policy of the United States," a policy which persisted in peace and through all our many wars until a wholesome change was begun in the establishment of a General Staff of the Army when Elihu Root was Secretary of War. The causes of our military weakness set forth by General Upton in 1881 were ten in number:

First—The employment of militia and undisciplined troops commanded by generals and officers utterly ignorant of the military art.

This has been partly changed by a complete federalization of the State troops in time of war. The new order is far from perfect. The National Guard is still under State influence, but trained officers of the Regular Army

are assigned to assist in its development and to hold commands in militia regiments under Federal control.

Second—Short enlistments, from three months to three years, instead of for or during the war.

All enlistments in the Regular Army and the National Guard are now for the period of the war. All drafted men will serve until the war is finished.

Third—Reliance upon voluntary enlistments, instead of voluntary enlistments coupled with conscription.

The fate of the nation in this war does not depend upon the volunteer system, which has proved a broken reed. The larger part of our war army will eventually be made up of drafted men, not conscripts in the old sense, but citizens of a nation which as a whole has volunteered. There will be no class distinction; men of all conditions of life will serve side by side, after scientific training in the art of modern warfare.

Fourth—The intrusion of the States in military affairs and the consequent waging of all our wars on the theory that we are a confederacy instead of a nation.

This evil has not been altogether corrected. The National Guard organizations belong to the States, and, in spite of the strong efforts of the Militia Bureau of the War Department to give them the training Federal troops should have, they still are afflicted with political officers. But there has been great improvement, and there will be greater.

Fifth—Confusing volunteers with militia and surrendering to the States the right to commission officers of volunteers, the same as officers of militia.

This has been reformed altogether. The volunteers are taken into the Regular Army. The drafted men are provided with trained officers under the direction of the War Department. The old bad system of making any man who had the political "pull" or the social popularity to raise a company a commissioned officer has been done away with forever.

The sixth, seventh, eighth, and ninth of General Upton's "causes" relate to the enticement of men to military service by bounties, the lack of territorial recruitment and regimental depots, the failure to appreciate military education and to distribute trained officers as battalion and higher commanders in volunteer organizations, and the lack of post-graduate schools for officers. These causes of military weakness no longer exist in this country. As for the tenth cause, the assumption of command in war by the Secretary of War, necessarily a civilian, if that is an evil we must still endure it. Secretary Root said of General Upton's treatise, when it was finally published in 1904 by order of Congress, that it—

was written from a purely military point of view, and in some parts shows a failure to appreciate difficulties arising from our form of government and the habits and opinions of our people, with which civil government has necessarily to deal in its direction of the military arm.

There is no general disposition to change our form of government, but there is a very common belief that when a nation is at war its military affairs should be administered by competent military authorities. With the right man as Secretary, there is no reason why there should be complications. We have been making progress towards the formation of a military system. We have had a General Staff for fourteen

years. It still lacks the full authority over the various army bureaus it should possess, and the hampering restrictions of the present national defense law must in time be removed. The lessons of this war should serve to make our military system both stronger and more flexible. They should move the American people also to compel an abandonment of the double-headed National Guard system and the permanent establshment of a system of universal military training which will provide us with an ample reserve army always ready for duty.—*New York Times*, July 3, 1917.

A Fleet of Airplanes

Above everything is the need for an overwhelming fleet of airships. The airship is becoming more important every day, both on land and sea, and it is apparent to every observer that wars cannot be won except by having a superiority over the enemy in airships. It is the lesson of a strong navy. Nations cannot control the seas and defend their own boundaries unless they have navies superior in strength to those of their enemies or of any likely combination of their enemies. That is the principle upon which Great Britain has always acted when she kept her navy superior to the combined navies of any two other nations. We must do the same with our airships.

People are startled now at the talk of having 1,000 airships, but it will not be long until we will be talking about 10,000, or even 20,000 airships. In fact, there seems no limit in the use of airships on land and sea. For example, it would seem to be a good thing to have airplanes largely replace cavalry. The office of cavalry has been to make sudden raids into the enemy's country, to take the enemy's trains, and to strike quickly at important places, bridges, crossings, mountain gaps, and other places in the rear of the enemy. It looks now as though this will be largely given over to the airships. An airship can be built about as cheaply, even more cheaply, than a good horse can be bought. The most expensive thing about them is the engine, now being standardized and turned out at a very low cost. Good working gasoline engines from 1½ to 2½ horsepower have been sold in this country in great numbers at $12.50. Of course, an engine sufficient for an airship would cost several times this, and still not be much over the price of a good cavalry horse. The rest of the airplane is mainly muslin, wire, and well-seasoned hickory and ash timber. An establishment like that of Henry Ford's could turn out these airplanes by the thousands every month. The smallest airplanes will carry two men; the larger ones, of course, more. An experienced aviator can be trained within six weeks, or less time than it takes to train a good cavalryman.

It would not cost as much to fit out a regiment of airships as it would to organize a regiment of cavalry with its horses, saddles, and other equipments. A regiment of airplanes would, therefore, be of the highest efficiency in scouting around an enemy's flanks, destroying bridges, burning trains, seizing gaps, and doing other work heretofore assigned to the cavalry. They would not be stopped by the usual impedimenta to cavalry—swollen streams, deep mud, and impassable roads over the mountains.

It is not visionary to look forward to

the American Army in France having a corps of fighting aviators as great as Murat's famous cavalry corps in the Napoleanic wars of 20,000 or 25,000 men.—*The National Tribune,* June 28, 1917.

The Doughboy

The real man of war is the infantryman, the dough boy carrying his 60-pound pack and his razor-edge bayonet. He is the boy who does the work and takes it at its hardest, dirtiest, and cruelest. He does not get the glamor; he gets the punishment.

The aviator soars to two hours of danger in the sweep and dash of the most chivalrous, romanticized effort of war and descends to ten of admiration, to lunch, and pretty women—or in a crumpled machine to a wreath of immortelles.

The cavalryman may swagger through popular applause. The artilleryman does his work pounding infantrymen—back of the trenches. When his guns are located he gets a pounding himself. There are heavy gun batteries in Germany which, it was said recently, have not lost a man. The gunner has a better chance than the doughboy, and no one pays any attention to the dough boy.

He does not get the roses. He gets the mud. He wades in water to his waist. He sits in dugouts and takes artillery fire until the enemy concludes that he has been blown into fragments, and he takes it with comrades scattered in bits all about him, waiting until the infantry on the other side comes across at him with bombs and bayonets.

He waits until his own artillery has ripped, beaten, and torn the trench across the way and then he goes over the top, across No Man's Land, swept by machine-gun fire, and to hand grips with an enemy keen to bayonet him and exterminate him in a nasty, personal way.

He falls into shell holes and drags himself through filth. He is plagued by rats and vermin. His food supply is cut off and he starves. He is the boy who does the work, and the smiles and flowers go elsewhere. He is the hero of war, the tough, dirty, unconscious hero of war, and if anyone paid any attention to him he'd drop dead.—*Chicago Tribune,* June 18, 1917.

Notes to Assist Company Officers in Preparing Lectures for the Training of Recruits

DRILL, MUSKETRY, DISCIPLINE, CRIMES AND PUNISHMENTS

1. *Drill.*—Of first importance in producing discipline and cohesion. Inculcates in the soldier the habit of absolute and instant obedience and teaches him to execute certain movements as second nature. Makes a man alert. The training of the body makes the soldiers physically fit and develops a capacity for resisting fatigue and privation. In all games and physical contests training is necessary; drill is the bed-rock training for war. Handling arms smartly. Absolute steadiness in the ranks; no moving, looking about or talking.

Organization of an infantry battalion and definitions.

Explain ranks and badges of officers and N. C. O.'s.

A File, a Squad, a Section, a Platoon, a Company, Column, Line, Distance, Interval, Wheeling, Forming, Close Order Drill, Extended Order Drill; objects of both and difference between them.

Advancing under fire and use of ground.

Training in marching and march discipline.

2. *Musketry — Care of Arms.* — Names of main parts of rifle. Cleaning kit, where kept and use. Cleaning of rifle. Causes of wear of barrel. Ammunition. Mechanism.

3. *Aiming and Firing Instruction.*— Reasons for sights on rifles. Importance of accuracy. Three rules of aiming. Aim at center of lowest part of aiming mark, and reasons.

4. *Reasons for a Normal Sight.*— Aiming off for wind and movement. Rapidity of aim (snap shooting). Rapid loading. Rapid fire, great importance of. Long range sights. Trigger pressing and how it affects shooting. Muscle exercises and their value.

5. *Judging Distance.*—Good results depend on ability to judge distance. Methods of judging distance—unit of measure, appearance of objects, comparison with known ranges, bracketing. Causes of over- and under-estimating distance.

6. *Theory.* — Rifling, meaning and use of. Action of bullet before leaving rifle (force of explosion). Action of bullet after leaving rifle, resistance of air, gravity, curved trajectory. Effect of fixing bayonet. Trajectory table.

7. *Types of Fire.*—Individual. Collective, concentrated, distributed.

8. *Visual Training.*—Necessity of invisibility on account of great accuracy of modern weapons. Make best use of ground and cover. Difference between cover from view and cover from fire.

Suitable formations. Training at night. Neutral tinted uniforms. Smokeless powder. Eye-sight requires training. Use of field glasses. Standard aimed at, that of a stalker. Study and use of ground. Ability to pick up enemy from surroundings and report on what is seen. Recognition of objects described.

9. *Military Vocabulary.*—Features of ground, colors, shapes, measurements, military objects generally. Description and explanation of other arms of the service, and weapons, munitions, etc.

10. *Discipline.*—One dictionary defines discipline as "action and conduct due to a superior." Military discipline, however, requires further explanation. It must be clearly recognized that for good and sufficient reasons implicit and unquestioning obedience is necessary in a soldier; without it he is merely an individual, brave and willing, no doubt; with it he forms part of an invincible army.

Americans naturally a free people, but submit readily to a rational discipline when once they understand its meaning and objects. Early discipline begun at school; games, Boy Scouts, Cadet Corps, etc. German discipline also begins from childhood; whole nation is kept in iron bands which would be intolerable to a free people. In our Army prompt and complete obedience is necessary, but our ideal is an obedience cheerfully rendered and entailing no loss of self-respect or independence of character in the soldier. Without discipline an army is a mob. Every soldier may retain his private opinions, but in training for war or at any military duty must submit his will unhesitatingly to that of his superior officer or noncommissioned officer. Soldier considering himself aggrieved by any order must obey first, unless the order is without doubt an unlawful one, and

complain afterwards. Method of making a complaint.

American military discipline suited to the characteristics of the race, because based neither on harshness nor fear of punishment, and because it is compatible with a mutual respect and liking between officers and men.

11. *Saluting.*—Great importance of constant attention to this duty. Slackness in saluting sign of bad discipline and want of smartness in offender's battalion.

Salute is given to the commission borne by the officer, not to the individual.

Saluting when passing an officer, when standing still, when carrying anything, when riding a bicycle, when on a cart or wagon, when on a horse, when carrying a rifle, groups of men sitting or standing when officer approaches.

Saluting colors. Saluting funerals. Saluting when passing a body of troops. Saluting the quarter deck of a man-of-war. Saluting by noncommissioned officers wearing a sword. Foreign officers to be saluted. How troops on the march exchange compliments.

Soldier removes head-dress in church or civil court, except when on duty under arms.

12. *Crime and Punishments.*—Much that is a venal offense in civil life becomes a serious crime in the Army—mutiny, insubordination, desertion, absence without leave, disobedience of orders, drunkenness. Late for parades or duties. Soldier in open arrest not allowed to quit barracks, etc. Courts-martial. Disposal of offenses by commanding officer and company officer. Punishments—death, penal servitude, imprisonment, detention and detention barracks, fines for drunkenness, forfeiture of pay for absence, confinement to barracks, field punishment.

Soldier disobeying an order distinctly given, or seriously insubordinate or drunk, at once placed in close arrest. Right of soldier to claim trial by court-martial.

Explanation of method of complaint in case of a soldier who has a grievance or considers himself wronged.

No wines or spirits allowed to be brought into barrack rooms. Officers and soldiers are forbidden to communicate to the press any military information, or to write on military subjects without permission.

Gambling is forbidden in barracks.

Many crimes become much more serious when committed on active service.

Company and Regimental Conduct Sheets. Field Conduct Sheet.

INTERIOR ECONOMY, PAY AND MESSING

1. *Daily Rates of Pay.*—All ranks.

2. *Stoppages.* — Allotment. Fines. Deprivation for absence. Payment for articles lost or destroyed through neglect.

3. *Method of Payment.* — Payroll kept under direction of company commander. Pay calculated after deducting stoppages. System of paying out to be explained. Men not satisfied with their pay should inform company officer at the time in a respectful manner, should remain behind until payment of company is finished, then be called in and have pay explained to them.

4. *Messing.*—Tell men what daily ration consists of. Allowance to supplement messing. Explain Weekly Diet Sheet. System of drawing rations and taking to cook-house. Duties of waiters, kitchen police and cooks. Visit of mess officer. Answering the mess offi-

cer when asked if there are any complaints.

5. *Clothing.*—Recruit to be warned that all clothing, etc., is the property of the Government, and that he is liable to punishment if he loses or destroys it; also he is not allowed to alter the pattern or wear other than that issued to him. All worn-out articles are submitted to company commander for condemnation.

6. *Duties.*—Reveillé. Retreat. Tattoo. Mess officer. Orderly. Sergeant and corporal. Roster. Guards. Duties under arms. Working parties. Fatigues. Soldiers warned for duties by means of daily orders posted in quarters of each company.

Duties on guard.—No article of clothing or accouterments to be removed. When do guards turn out? Action in case of fire or other alarm. Sentries' duties. Sentries relieved every two hours. Slackness or sleeping on sentry. Guards, various kinds, and duties. Escorts. Drunkenness on duty. On active service soldier always on duty.

ACTIVE SERVICE, TRENCH WARFARE, PROTECTION, HYGIENE

1. *Conduct on Active Service.—Esprit de corps* or pride in all parts of the regiment. Soldier should believe his platoon and his company best in the battalion, and latter best in brigade, and so on.

Discipline and *esprit de corps* will carry troops on active service through severest trials and privations. Examples. Constant care of rifle and ammunition. March discipline generally. Orders as to iron ration. Water bottle kept filled. Gas helmet ready. First-aid packet in proper place. Soldier always to know position of his platoon or company commander, number of his brigade and division, and names of commanders.

Dirt everywhere on service, great necessity of personal cleanliness. No man to accompany wounded comrade to rear. Straggling. Importance of secrecy as to orders and movements. Never give information to inhabitants. Enemy's spies everywhere. Keep eyes and ears open and mouth shut. No military information to be divulged in letters home.

Conduct in billets.—Greatest civility and forbearance towards inhabitants of friendly foreign country. Leave billets if possible cleaner than you find them.

Forbidden to give away or sell any cap or other badges.

All misbehavior and crime doubly worse, and punishment more severe, when committed on active service.

Absence, desertion, sleeping on post.

Death penalty for certain offenses.

Soldier on service often alone and thrown on his own responsibility.

If taken prisoner, only true name and rank (not corps or appointment) to be given. No other information whatever.

Men warned against any conversation or other intercourse with enemy prisoners; they are to be properly and justly dealt with, but should receive no friendly or kindly treatment.

2. *Trench Warfare.*—Explain that trench warfare and trench fighting are only one phase of war. General description of trenches, front line fire trenches. Supervision, support, and reserve trenches. Communication trenches. Slit trench. Traverses. Dugouts. Parapets or parados. Fire step. Loopholes. Obstacles. Machine-gun emplacements. Drainage and flooring of trenches. Latrines. Sanitation and care of feet. How trenches are

occupied and usual distribution of a battalion and regiment. Duties in the trenches.

How men in trenches are relieved and method of carrying out a relief.

Observation and sniping. Constant necessity of repairing trenches.

How rations are brought up and troops fed in trenches. Action in case of attack by enemy. Assault of the enemy's trenches.

Consolidating captured trenches and positions.

3. *Bombing.*—Outline of lectures will be found in training manuals.

4. *Protection.* — Every commander responsible for the protection of his command against surprise. Troops on the move, advanced flank and rear guards. Troops at rest, outposts.

Duty of all of above, at all risks to gain time for the body it protects to prepare to meet attack. Ordinary formation of advance guards, etc. Employment of air-craft and mounted troops. Rear-guard methods of delaying enemy's advance. Outguards, supports, reserves. Sentries and sentry groups. What every sentry must know. Detached posts. Outpost patrols. Standing patrols. Flags of truce. Deserters from enemy. Smoking, fires and cooking. Relief of the outposts.

5. *Hygiene and Sanitation.*

6. *First Field Dressing.*

The lectures on these subjects should be delivered by medical officers.

It is, however, the duty of company officers to take the first opportunity of impressing on the young soldier the dangers of venereal disease, and the importance of taking steps to arrest its progress from the very outset. It is also the duty of company officers to bring home to the soldier that any action on his part which tends to make him unfit to take his place in the fighting line is an unsoldierly act.

OUTLINE OF LECTURES ON ANTI-GAS MEASURES TO BE GIVEN TO RECRUITS IN THE FIRST FORTNIGHT OF TRAINING

Lectures should include as much demonstration as possible and should not last more than half an hour.

1. *Cloud or Cylinder Gas.*—General character and action of the gas used. How an attack is made. Weather conditions, "Gas alert," or "Wind dangerous." Time and signs of an attack. Length of warning. How the alarm is given. Course taken by the gas. Effect in trenches and dugouts and on arms and ammunition.

Protection by helmet and by box-respirator. Description of these. Their inspection and use. Clearing of gas from trenches and dugouts after an attack. Fans, fires, and sprays.

Casualties. Their cause. Importance of not becoming breathless by unnecessary movement, and of rest after being at all gassed. First aid.

2. *Gas Shells (Tear-shells, or "Lachrymatory" Shells).* — Their general character and mode of use for short or long effects. Action of vapors on the eyes and breathing passages.

Protection by goggles. Description of these. Use of earth for covering the scattered liquid.

3. *Gas Shells (Poison Gas Shells).*— Their general character and mode of use. Action of vapor on the eyes, and when breathed. Protection by goggles, helmets and box-respirator.

4. *Flammenwerfer (Flame Thrower).*—General explanation of the principles of its action.

Over the Top

Letter Written by Capt. V. G. Tupper, of Canadian Scottish, 16th Battalion, before Battle of Vimy Ridge.

My Dear Father:

I am writing one of these "in case" letters for the third time, and of course I hope you will never have to read it—if you are reading now, you will know that your youngest son "went under" as proud as Punch on the most glorious day of his life. I am taking my company over the top for a mile, in the biggest push that has ever been launched in the world, and I trust that it is going to be the greatest factor toward peace.

Dad, you can't imagine the wonderful feeling—a man thinks something like this, "Well, if I am going to die, this is worth it a thousand times."

I have been over two or three times before, but never with a company of my own. Think of it—a hundred and fifty officers and men who will follow you to hell if need be!

I don't want any of you dear people to be sorry for me, although of course you will in a way. You will miss me, but you will be proud of me. Mind you, I know what I am up against and that the odds are against me. I am not going in the way I did the first time, just for sheer devilment and curiosity. I have seen this game for two years and I still like it and feel that my place is here.

So much for that. I want to thank you from the bottom of my heart for all your loving kindness to me. This war has done wonders to me, and makes me realize lots of things which I would not have done otherwise. I could write a book about it, but you know what I mean.

Good-bye, dear father and mother, and all of you. Again I say that I am proud to be where I am now.

Gordie.

P. S.—I have $500 or so in the bank in London. It will go to you, and I would like you to get it to little Bee Merritt. V. G. T.

Army Camps

Regular Army Camps (Infantry)

SYRACUSE, N. Y.

(Maj. Gen. Charles G. Morton)

Regiment	*Colonel*
9th Infantry	L. W. V. Kennon
23d Infantry	W. K. Wright
30th Infantry	A. P. Buffington
38th Infantry	
39th Infantry	C. H. Ballou
47th Infantry	H. Hall
48th Infantry	H. R. Lee
49th Infantry	J. A. Penn
50th Infantry	
4th Field Artillery	W. J. Snow
5th Field Artillery	G. G. Gatley

FORT SNELLING, MINN.

(Brig. Gen. Wm. H. Sage)

36th Infantry	A. L. Parmerter
40th Infantry	
41st Infantry	M. D. Cronin

FORT DOUGLAS, UTAH

20th Infantry	A. Hasbrouck
42d Infantry	S. L. Faison
43d Infantry	W. R. Sample

VANCOUVER BARRACKS, WASH.

14th Infantry	H. D. Styer
44th Infantry	B. C. Morse

CHICKAMAUGA PARK, GA.

(Maj. Gen. John F. Morrison)

6th Infantry	R. H. Noble
11th Infantry	A. Pickering
51st Infantry	A. Johnson
52d Infantry	E. V. Smith
53d Infantry	C. E. Tayman
54th Infantry	F. H. Albright
55th Infantry	C. H. Martin
56th Infantry	

FORT BENJ. HARRISON, IND.

(Brig. Gen. Edwin F. Glenn)

Regiment	*Colonel*
10th Infantry	D. B. Devore
45th Infantry	E. M. Lewis
46th Infantry	

DOUGLAS, ARIZ.

19th Infantry	M. F. Waltz
57th Infantry	C. S. Farnsworth
6th Field Artillery	W. S. McNair

GETTYSBURG NATIONAL PARK, PA.

(Brig. Gen. Chase W. Kennedy)

4th Infantry	E. E. Hatch
7th Infantry	F. B. Jones
58th Infantry	M. L. Hersey
59th Infantry	B. W. Atkinson
60th Infantry	M. J. Lenihan
61st Infantry	S. W. Miller

PRESIDIO OF SAN FRANCISCO

(Brig. Gen. Henry C. Hodges)

12th Infantry	E. F. Taggart
62d Infantry	C. H. Barth
63d Infantry	R. C. Croxton

EL PASO, TEX.

34th Infantry	D. L. Howell
64th Infantry	U. G. McAlexander
18th Field Artillery	O. W. B. Farr

National Guard Camps

26th Division, Camp Greene, Charlotte, N. C., for troops from Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, after Gen. Nathaniel Greene.

27th Division, Camp Wadsworth, Spartanburg, S. C., for troops from

New York, after Brig. Gen. J. S. Wadsworth.

28th Division, Camp Hancock, Augusta, Ga., for troops from Pennsylvania, after Maj. Gen. Winfield Scott Hancock.

29th Division, Camp McClellan, Anniston, Ala., for troops from New Jersey, Virginia, Maryland, Delaware and the District of Columbia, after Maj. Gen. G. B. McClellan.

30th Division, Camp Sevier, Greenville, S. C., for troops from Tennessee, North Carolina and South Carolina, after Brig. Gen. John Sevier.

31st Division, Camp Wheeler, Macon, Ga., for troops from Georgia, Alabama and Florida, after Lieut. Gen. Joseph Wheeler.

32d Division, Camp MacArthur, Waco, Tex., for troops from Michigan and Wisconsin, after Lieut. Gen. Arthur MacArthur.

33d Division, Camp Logan, Houston, Tex., for troops from Illinois, after Maj. Gen. John A. Logan.

34th Division, Camp Cody, Deming, N. Mex., for troops from Minnesota, Iowa, Nebraska, North Dakota and South Dakota, after Col. William F. Cody.

35th Division, Camp Doniphan, Fort Sill, Okla., for troops from Missouri and Kansas, after Col. A. W. Doniphan.

36th Division, Camp Bowie, Fort Worth, Tex., for troops from Texas and Oklahoma, after Col. James Bowie.

37th Division, Camp Sheridan, Montgomery, Ala., for troops from Ohio and West Virginia, after Gen. P. H. Sheridan.

38th Division, Camp Shelby, Hattiesburg, Miss., for troops from Indiana and Kentucky, after Col. Isaac Shelby.

39th Division, Camp Beauregard, Alexandria, La., for troops from Louisiana, Mississippi and Arkansas, after Gen. P. G. T. Beauregard.

40th Division, Camp Kearney, Linda Vista, Cal., for troops from California, Nevada, Utah, Colorado, Arizona and New Mexico, after Brig. Gen. S. W. Kearney.

41st Division, Camp Fremont, Palo Alto, Cal., for troops from Washington, Oregon, Montana, Idaho and Wyoming, after Maj. Gen. J. C. Fremont.

National Army Cantonments

Camp Devens, Ayer, Mass., for troops from Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, after Brig. Gen. Charles Devens. Contractor, Fred T. Ley & Co., Springfield, Mass.

Camp Dix, Wrightstown, N. J., for troops from New York State and Pennsylvania, after Maj. Gen. John Adams Dix. Contractor, Erwin & Leighton, of Philadelphia.

Camp Jackson, Columbia, S. C., for troops from Tennessee, North Carolina and South Carolina, after Maj. Gen. Andrew Jackson. Contractor, S. C. Hardaway Construction Co., Columbus, Ga.

Camp Gordon, Atlanta, for troops from Georgia, Alabama and Florida, after Lieut. Gen. J. B. Gordon. Contractor, Arthur Tufts, of Atlanta.

Camp Lewis, American Lake, Wash., for troops from Washington, Oregon, California, Nevada, Utah, Idaho, Montana, and Wyoming. Contractor, Hurley-Mason Co., of Tacoma.

Camp Lee, Petersburg, Va., for troops from New Jersey, Virginia, Maryland, Delaware and the District of Columbia, after Robert E. Lee. Contractor, Rinehart & Dennis, of Charlottesville.

Camp Custer, Battle Creek, Mich., for troops from Michigan and Wisconsin, after Maj. Gen. George A. Custer. Contractor, Porter Bros., of Detroit.

Camp Funston, Fort Riley, Kans., for troops from Kansas, Missouri and Colorado, after Maj. Gen. Frederick Funston. Contractor, George A. Fuller Co., New York.

Camp Dodge, Des Moines, Iowa, for troops from Minnesota, Iowa, Nebraska, North Dakota, and South Dakota. Contractor, Chas. Weitz Sons, Des Moines.

Camp Travis, Fort Sam Houston, Tex., for troops from Texas, Arizona, New Mexico and Oklahoma, after Lieut. Col. W. B. Travis. Contractor, Stone & Webster, Boston.

Camp Grant, Rockford, Ill., for troops from Illinois, after Gen. U. S. Grant. Contractor, Bates-Rogers Co., Chicago.

Camp Taylor, Louisville, Ky., for troops from Indiana and Kentucky, after Maj. Gen. Zachary Taylor. Contractor, Mason, Hangar & Co., Richmond and Lexington, Ky.

Camp Sherman, Chillicothe, Ohio, for troops from Ohio and West Virginia, after Gen. W. T. Sherman. Contractor, The A. Bentley Co., Toledo, O.

Camp Upton, Yap Hank, L. I., for troops from the metropolitan portion of New York City, after Maj. Gen. Emery Upton. Contractor, Thompson, Starrett Co., 51 Wall St., New York City.

Camp Meade, Annapolis Junction, Md., for troops from southern Pennsylvania, after Maj. Gen. George G. Meade. Contractor, Smith, Hauser & M. F. McIsaac, 18 E. 41st St., New York City.

Camp Pike, Little Rock, Ark., for troops from Arkansas, Louisiana and Mississippi, after Brig. Gen. Z. M. Pike. Contractor, James Stewart Company, New York and St. Louis.

Editorial Department

Training and Discipline

The training of all arms and corps of an army necessarily assumes two phases:

1. Instruction in the mechanical or technical duties pertaining to the particular arm.

2. The imparting of discipline.

All informed military critics agree that the individuals of an organization of any branch of the service become proficient in the mechanical or technical duties of their arms long before they acquire the necessary discipline to be competent and efficient soldiers.

Well-informed critics also agree that discipline is one of the most vital requisites of a soldier, and without discipline of the highest order, cohesion and control are utterly impossible. An army without these essentials degenerates into the condition of a mob that is as dangerous to itself and the country it protects as to the enemy.

The offensive requires a higher state of training and discipline than the defensive. An army that has not the power of taking and maintaining the offensive has already suffered defeat.

The offensive is largely the function of the infantry. The other arms and corps are auxiliary to it.

That arm or corps, therefore, which requires the highest state of discipline to make it successful in war must necessarily receive the longest training. That arm or corps which is called upon to make the longest and most fatiguing marches, to undergo the greatest physical and mentain strain, do the hardest and closest fighting, and suffer the greatest losses in killed and wounded, must have the most highly trained and disciplined men.

The infantryman must make the hard and long marches on foot through the stifling heat and dust of summer and through the mud and slush of winter; he must make the attack over the zones swept by fire from artillery, rifles and machine guns; he must finally assault with the bayonet and measure his skill against that of the enemy with cold steel; in other words, he must have the courage and sheer nerve that will make him willing to face the worst horrors of the modern battlefield and endure nearly all the losses of war. The other arms are seldom called on to face these horrors or losses; the infantryman always, if success is to be attained. Only men of the highest training and discipline will face them. The infantryman *must* face them; therefore he must be the most highly trained and disciplined of all soldiers. To attain this high state of discipline infantry must necessarily have the hardest, most intensive, and longest training of all the arms.

Discipline, in connection with the imparting of instruction, is used in its broadest sense, and by it is meant not merely that quality of the soldier which makes him observe the rules and regulations of the service, but that higher and more necessary quality which enables him instinctively to be one of the parts of a great and complicated machine, which will enable his commanders, from squad leader to division commander, to maintain cohesion and

control of the units under their command in battle, and which will insure this cohesion and control after the advance and assault, as well as before.

To enable him to acquire the training which will make this cohesion and control possible, the infantryman must be taught to perform his functions in the squad, the squad in the platoon, the platoon in the company, the company in the battalion, and the battalion in the regiment; in other words, each unit must be taught the requisite team work. Instruction of each of these units, to enable it to function in the next higher, must be progressive, and is a matter of long and arduous training.

The instruction of infantry in fire control and discipline now simulates very closely that of field artillery, with this difference: in the infantry every soldier in the company must be an expert with his arm, while the guns are served by a few experts only, and is in itself a matter of six months' training for companies of old soldiers.

The loss of cohesion and control on the part of the partially trained British infantry at Nueve Chapelle cost Great Britain thousands in killed, wounded and prisoners, and lost her a great victory which might have been a determining factor in the present war. The enthusiasm and patriotism of the new British levies carried them over and through the advanced German trenches, but they lost cohesion and control, became disorganized, and, falling an easy prey to the highly disciplined and trained infantry opposed to them, not only were they driven from the trenches they had captured, but lost some three or four miles in depth of the position they had previously held.

The Battle of Loos is another striking example of the folly of depending on untrained troops, and especially untrained infantry. In this battle the British losses were 2,378 officers and 57,288 enlisted men, or 60,000 in round numbers.

According to German army officers, into whose hands the orders for the English offensive afterwards fell, the battle was very skillfully planned on the part of the division and brigade commanders, but when the lower units were thrown on their own responsibility they were utterly at sea; in other words, they lacked discipline and trained initiative, cohesion and control were lost, the attack came to a standstill, and the partially trained British infantry were killed and captured by the thousands. But none of these British infantry had less than nine months' training and most of them a year or more.

This lack of trained initiative and the power of cohesion and control is always to be found in new troops, and has nothing to do with the ability to shoot or personal courage. No one questions the courage of the individual British infantryman, not even his German antagonist; he simply lacked the necessary training.

Finally, let it not be forgotten that the infantryman is the soldier on whose efforts, in making or resisting the assault, will, in the last analysis, depend victory or defeat. Any scheme of organization or training that is based on the principle that it takes less time to train infantry than the other arms or corps is suicidal, and one that will lead us eventually to a Nueve Chapelle or a Loos.

How to Maintain Our Families

We invite special attention to the following proposed amendment to S. 1786, introduced by Senator Watson, and we urge the assistance of all friends of the Army in the passage of this specially meritorious bill.

"AMENDMENT

Intended to be proposed by Mr. Watson to the bill (S. 1786), to amend certain sections of an Act entitled "An Act for making further and more effectual provision for the national defense, and for other purposes," approved June third, nineteen hundred and sixteen, and for other purposes, viz, at the end of section eleven add the following:

"That in time of war every commissioned officer of the Army on active duty, with or without troops, who has a wife, child, or parent wholly dependent on him for support and designated by him as his beneficiary, shall be furnished at the place where he maintains such dependent the number of rooms now prescribed by the Act of March second, nineteen hundred and seven (Thirty-fourth Statutes, page eleven hundred and sixty-eight), or be paid commutation therefor at the rate now authorized by law."

The Thirty-fourth Statutes read as follows:

(*a*) "That at places where there are no public quarters commutation therefor may be paid by the pay department to the officer entitled to the same at a rate not exceeding twelve dollars per month per room." Act of March 2, 1907 (34 Stat. 1169).

(*b*) "At all posts and stations where there are public quarters belonging to the United States officers may be furnished with quarters in kind in such public quarters, and not elsewhere, by the Quartermaster's Department assigning to the officers of each grade respectively such number of rooms as is stated in the following table, namely: Second lieutenant, two rooms; first lieutenant, three rooms; captain, four rooms; major, five rooms; lieutenant colonel, six rooms; colonel, seven rooms, brigadier general, eight rooms; major general, nine rooms; lieutenant general, ten rooms." Act of March 2, 1907 (34 Stat. 1168).

We showed the necessity for such relief legislation, in our last number, under the editorial entitled "How to Maintain our Families."

This is a matter which vitally concerns all officers who are married or expect to be, whether of the Reserve Corps, National Army, National Guard or Regular Army.

Congress has shown, by its increase of pay of enlisted men and by providing in S. 1786 (to which the Watson bill is an amendment) for a separation allowance for enlisted men having dependents, that it was never intended that officers should suffer a reduction of at least 25 per cent of their peace-time pay and allowances, as is done by the following decision of the War Department (published in Bulletin No. 35, June 15, 1917):

Duty with troops in the field during present war is not temporary duty.—All duty with troops of any kind in the field, at home or abroad, during the present war, will be considered as not temporary duty in the field in contemplation of the act of Congress, approved February 27, 1893, which provides that officers temporarily absent on duty in the field shall not lose their right to quarters or commutation thereof at their permanent stations while so temporarily absent. Under this decision no officer or enlisted man on duty in the field can have any official station elsewhere, within the meaning and contemplation of the laws and the regulations relating to the allowance of quarters or commutation thereof, but while on such duty his rights as to quarters will be as prescribed for field service.

This decision having been made, the

only relief is for Congress, by further legislation, to make known its intention not to do a grave injustice to officers just at the time of their greatest trials and hardships.

But few officers of the Regular Army, National Guard, Reserve Corps or National Army have incomes outside their pay, and those who serve only for the war (as well as others) will find that the pay received from the Government will not meet the expenses of maintaining their families, at a place far removed from their station in the field, keep up their own expenses and pay for horses, uniform, equipment, etc.

Congress knows that officers with dependents should be freed from worry over maintenance of their families, by the Government allowing them at least enough to pay the rent of a home. This is one reason why our pay is small and a home is allowed us as part of our compensation in time of peace. Why not in time of war? We do not fear that Congress will not see the justice in this plea, but it needs to be specially brought to the attention of individual members as they are busy men whose time is largely taken up by more pressing measures.

It means little to the public at large, but the failure to grant this relief means that a proper obligation of the Government is evaded and passed on to individual officers whose pay will not bear it.

It is an unfair and burdensome tax as it reduces an officer's net income below that allowed him in time of peace and below the actual cost of living at this time.

This bill does not apply to all officers but only to those having dependents for whom they must provide.

It thus places all officers on an equal footing in so far as they are individually concerned.

Another reason for the relief asked for is the unexpected issuance of General Orders No. 86, War Department, dated July 10, 1917, which bars the storage by the Government of an officer's household effects while he is in the field.

The result of this order is that officers will have to pay high storage charges of at least $12.00 per month, whereas the Government should and could care for their property at a fraction of this cost.

Because of the necessity of shipping such property to the place of storage an added expense for freight on the excess baggage must be paid by the officer concerned.

Above all, the discontinuance of these allowances will have a tendency to keep poor men with families and dependents out of the army. It will materially reduce the supply of officers for the great army which is to be called into the field. The military authorities agree that officers should be older men, most of whom, on account of age and dependents, are exempt from the draft. It is apparent that, in the great shortage of material for officers, the military necessities of the country require that the allowances for wartime should be at least equal to those of peace. This is not a debatable question, when the cost of an officer's uniform and equipment and the expenses of maintaining his family under war conditions are taken into consideration.

We hope that the War Department will realize the situation in which officers are placed and will lend support to the Watson Amendment.

Night Operations

A Department devoted to the interests of newly commissioned Infantry Officers, Officers of the Infantry Officers' Reserve Corps, and candidates for Commission.

Conducted by Capt. W. H. Waldron, 29th Infantry

SMALL ARMS FIRING REGULATIONS

Definitions—Target Seasons—Sights—Sighting Drills—Position and Aiming Drills—Trigger Squeeze Exercise—Rapid Fire Exercise—Sight Corrections—Gallery Practice—Estimating Distance—Range Practice—Instruction and Record—Special Course A—Advice to Riflemen—Handling the Pistol—Grades of Marksmanship—Insifinia—Target Records—Targets Used in Target Practice.

Q. What book would you consult to get the details of conducting target practice in your organization?

A. The Small Arms Firing Manual.

Q. What is the battle-sight?

A. The position of the rear sight in which the leaf is laid down. The actual range of the battle-sight is about 550 yards.

Q. What is meant by the caliber of a rifle?

A. The interior diameter of the small-arms barrel, measured between the lands. The caliber of the U. S. Magazine rifle is .30 inch.

Q. What is meant by canting the rifle.

A. To revolve the barrel of the piece on its axis to the right or left while aiming.

Q. What do you understand by the term "combat practice"?

A. The prescribed firing at targets which simulate the appearance of an enemy under conditions approaching those found in war, and the application of this class of fire to tactical exercises.

Q. What is meant by estimating distance?

A. Judgment by the eye of the distance of an object from the observer. Distance may also be judged by sound.

Q. What is meant by fire control?

A. Fire control, or conduct of fire, is the exercise by a commander, over his unit or units, of that power which enables him to regulate the fire in obedience to his will. It pertains especially to the technicalities immediately involved in delivery of fire.

Q. What is meant by fire direction?

A. Fire direction, or employment of fire, is a general term embracing the various steps, including practical disposition, which enable the commander of one or more fire units to bring an effective fire to bear upon the desired target at the proper time. It pertains especially to preparations of fire.

Q. What is mean by fire discipline?

A. Fire discipline is that condition of the personnel of a fire unit, resulting from training and practice, which enables the commander to obtain an orderly and efficient delivery of fire.

Q. What is gallery practice?

A. Firing at reduced targets at short ranges with small-caliber rifles.

Q. What is meant by mirage?

A. A word used to designate the heat waves observed on the target range on warm days. The waves indicate the direction in which the air is moving.

Q. What is the meaning of the word "o'clock" as applied to target firing?

A. A term employed to indicate, by means of the divisions on the dial of the clock, the location of a hit on the target or the direction from which the wind may be blowing, as a 7 o'clock, 4 or 5 o'clock, wind. In speaking of the position of a hit, the dial is supposed to occupy the front of the target facing the firer, with 12 at the top of the target. In speaking of wind, the dial is supposed to lie on the ground, with the 12 toward the target and the center at the firing point.

Q. What is rapid fire?

A. The class of fire employed in instruction and qualification practice in which a

time limit is set for completing a score or scores.

Q. What is meant by the regular season applied to target firing?

A. Comprises two months, not necessarily consecutive, of the target year, selected by the department commander, in which the prescribed course of known distance and combat firing is pursued.

Q. What are ricochet shots?

A. Bullets which rebound after striking the ground or any other obstacle and continue their flight are said to ricochet.

Q. What is a score in target practice?

A. A string of consecutive shots fired in individual practice. The term "score" is also used to express the record or register of number of points made in one or more scores, the value of sighting shots being excluded. In record practice with rifle, scores consist of 5 shots in slow fire and 10 shots in rapid fire; with the automatic pistol, 5 shots. In instruction practice with rifle, 10 shots or 5 shots may constitute a score.

Q. What are sighting shots?

A. The trial shots which precede scores in the qualification test firing to enable the soldier to determine the proper sight setting or point of aim.

Q. What is meant by slow fire?

A. The class of fire employed in instruction and record practice in which no time limit is imposed for completing a score.

Q. What is the supplementary season in target practice?

A. A period of the target year designated by the department commander, in which all recruits who have joined too late to participate in the regular practice season will fire a prescribed course.

Q. What is the trajectory of a bullet?

A. The path described by a bullet in the air moving under the combined influences of the force of propulsion, the force of gravity, and the resistance of the air.

Q. What is meant by windage?

A. The influence of the wind in deflecting the bullet from the point at which it is aimed; also applied to the amount of change made on the wind guage.

Q. What is a wind gauge?

A. A graduated attachment on the rear sight of the rifle by which allowance may be made in aiming for the effect of the wind upon the bullet and for drift.

Q. What is the purpose of rifle training for the soldier?

A. To make him a good shot under war conditions.

Q. What are the general objects of the scheme of instruction in rifle firing?

A. To train the soldier to fire his rifle at known distances in the various kinds of fire employed in actual service as to bring his skill as a rifleman up to the capabilities of his weapon; after this to so train him that in firing as a part of a tactical unit he will utilize his individual skill to the best advantage in operations simulating those of the battlefield.

Q. What are the progressive steps taken for the training of the soldier in rifle firing?

A. By means of preliminary drills and gallery practice the soldier is trained in the fundamental principles of marksmanship; by means of range practice he is taught to apply these principles in firing, at fixed distances, at clearly defined targets. This training is merely preparatory to combat firing in which individuals learn cooperation and commanders and leaders learn how to obtain the maximum efficiency of fire by a judicious coordination of the skill and the efforts of all the individuals of the group of fire unit.

Q. What are the several elements in the course of instruction in rifle firing?

A. 1. Nomenclature and care of the rifle.
2. Sighting drills.
3. Position and aiming drills.
4. Deflection and elevation correction drills.
5. Gallery practice.
6. Estimating distance drill.
7. Individual known distance firing, instruction practice.
8. Individual known distance firing, record practice.
9. Long-distance practice.
10. Practice with telescopic sights.
11. Instruction combat practice.
12. Combat practice.
13. Proficiency test.

Q. What are the several grades of marksmanship that soldiers may attain?

A. 1. Expert rifleman, 253 points.
2. Sharpshooter, 238 points.
3. Marksman, 202 points.
4. First-class man, 177 points.
5. Second-class man, 152 points.
6. Unqualified, all who fail to qualify as second class or better, and those who for any reason did not fire the course and are not otherwise classified.

Q. What are the purposes of classification in marksmanship?

A. 1. Expert rifleman, sharpshooter and marksman for the extra pay allowed for these classifications.
2. First-class man and second-class man, to give encouragement to the poorer grades of shots and to provide the soldier who has been unable to qualify as marksman or better with more definite record of marksmanship.
3. The class unqualified is made to include those men borne on the rolls of an organization who have fired and failed to make second class or better, and all others who for any reason have not been classified.

Q. What end should the rifle training of a company produce?

A. Uniform proficiency rather than expertness on the part of a comparatively few men.

Q. What is the purpose of the supplementary target season?

A. A supplementary course of instruction is prescribed for the benefit of recruits. This practice is for the purpose of preventing an accumulation of recruits totally uninstructed.

Q. What is the value of the sighting and position and aiming drills?

A. To inculcate the principles of shooting into the soldier before he fires on the range.

Q. To whom are the sighting drills given?

A. To all soldiers who have not qualified as marksman or better in the preceding target year.

Q. What are the purposes of the sighting drills?

A. 1. To show how to align the sights properly on the mark.
2. To discover and demonstrate errors in sighting.
3. To teach uniformity in sighting.

Q. What kinds of sights are provided for on the rear sight of the rifle?

A. 1. The open sight.
2. The peep sight.

Q. What are the three classes of sight?

A. 1. The full sight, never used.
2. The half sight; normally used.
3. The fine sight.

Q. How is the line of sight determined with the open sight?

A. By a point in the middle line of the notch of the rear sight and top of the front sight.

Q. How is the line of sight determined with the peep sight?

A. By the center of the peep and the top of the front sight.

Q. What point of aim is the soldier taught to take?

A. The soldier will be informed that to give the greatest uniformity a point just below the mark, and not the mark, is taken as *the point of aim*, as it is impossible to always know, if touching the mark with the top of the front sight, how much of the front sight is seen; that the term "on the mark or bull's-eye" will be understood to mean an aim, taken just below the mark, showing a fine line of light between the mark and the top of the front sight.

Q. What sight should the soldier be taught to use?

A. The half sight.

Q. What is the invariable rule as to the point on which the eye should be focused in aiming the rifle?

A. The eye must be focused on the bull's-eye or mark, and never on the front or rear sight.

Note.—The eye can be focused accurately upon objects at but one distance at a time; all other objects in the field of view will appear more or less blurred, depending on their distance from the eye. This can readily be seen if a pencil is placed in the field of view near the eye while looking at some distant object. The pencil will appear blurred. This is the condition met with by the normal eye in sighting a rifle. If the eye is focused on one of the three points—the bull's-eye, the front sight, or the rear sight—the other two will appear blurred. This blurring effect is best overcome by using the "peep sight," as though looking through a

window, and focusing the eye on the bull's-eye. The blurring of the peep hole will be concentric, giving a clear and easily defined center. The blurring of the front sight will be less, but symmetrical on both sides with very little blur on the top. It can be readily and naturally brought to the center of the peep hole. Variations in light have less effect on the peep than on the open sight.

Q. Under what conditions of combat are the peep and open sights used?

A. The limited field of view and lack of readiness in getting a quick aim with the peep sight limit its use to those stages of the combat when comparative deliberation will be possible. In the later stages of battle—especially when a rapid fire is to be delivered—the open sight will, in most cases, be used. In this case the normal sight should be used, as the horizontal line at the top of the notch of the rear sight affords a good guide for regularity.

Q. Of what does the first sighting exercise consist?

A. 1. Using illustrations, describe the normal sight and the peep sight.

2. Using the sighting bar, represent the normal sight and the peep sight and require each man in the squad to look at them.

3. Using the sighting bar, describe and represent the usual errors of sighting and require each man in the squad to look at them.

Q. Of what does the second sighting exercise consist?

A. This exercise is designed to teach the soldier to place his eye in the line of sight properly; it is conducted as follows:

Using the sighting rest for the rifle, require each man to direct the marker to move the disk until the rifle is directed on the bull's-eye with the normal sight and command "Hold." The instructor will verify this line of sight. Errors, if any, will be explained to the soldier and another trial made.

Q. What faults of sighting will be made apparent by the second sighting exercise?

A. Soldiers will sometimes be found who do not know how to place the eye in the line of sight; they often look over or along one side of the notch of the rear sight and believe that they are aiming through the notch because they see it at the same time that they do the front sight. This error will probably be made evident by the preceding exercise. Some men in sighting will look at the front sight and not at the object. As this often occasions a blur, which prevents the object from being distinctly seen and increases both the difficulties and inaccuracies of sighting, it should be corrected.

Q. Of what does the third sighting exercise consist?

A. It consists of making the sighting triangle as follows:

Using the sighting rest for the rifle, require each man to direct the marker to move the disk until the rifle is directed on the bull's-eye with the normal sight and command "Mark;" then, being careful not to move the rifle or sights, repeat the operation until three marks have been made.

The Triangle of Sighting.—Join the three points determined as above by straight lines, mark with the soldier's name, and call his attention to the triangle thus formed. The shape and size of this triangle will indicate the nature of the variations made in aiming.

Q. What are the causes of abnormally shaped sighting triangles?

A. Abnormal Shape, Causes.—If the triangle is obtuse angled, with its sides approaching the vertical, the soldier has not taken a uniform amount of front sight. If the sides of the triangle are more nearly horizontal, the errors were probably caused by not looking through the middle of the notch or not over the top of the front sight. If any one of the sides of the triangle is longer than one-half inch, the instructor directs the exercise to be repeated, verifying each sight and calling the soldier's attention to his errors. The instructor will explain that the sighting gains in regularity as the triangle becomes smaller.

Q. What are the objects of the fourth sighting exercise?

A. To illustrate to the soldier the effect of canting the rifle to the right or left when firing.

Q. Of what does the fourth sighting exercise consist?

A. Use the sighting rest with the rifle firmly held in the notches, the bolt removed. Paste a black paster near the center of the bottom line of the target. Sight the rifle on this mark, using about 2,000 yards elevation, then, being careful not to move the rifle, look through the bore and direct the marker to move the disk until the bull's-eye is in the center of the field of view and command "Mark." Next turn the rest with the rifle on its side, and with the same elevation sight on the same paster as above, then, being careful not to move the rifle, look through the bore and again direct the marker to move the disk until the bull's-eye is in the center of the field of view and command "Mark." Not considering the fall of the bullet, the first mark represents the point struck with the sight vertical, the second mark represents the point struck, low and to the right, using the same elevation and the same point of aim, when the piece is canted 90 degrees to the right.

Different degrees of canting the piece can be represented by drawing an arc of a circle through the two marks with the paster as a center. The second mark will be at a point on this arc corresponding to the degree of canting the piece. Emphasis will be laid upon the fact that this effect of canting increases with the distance from the target.

Q. What is the purpose of the position and aiming drills?

A. These drills are intended to so educate the muscles of the arm and body that the piece, during the act of aiming, shall be held without restraint, and during the operation of firing shall not be deflected from the target by any convulsive or improper movement of the trigger finger or of the body, arms, or hands. They also establish between the hand and eye such prompt and intimate connection as will insure that the finger shall act upon the trigger, giving the final pressure at the exact moment when the top of the front sight is seen to be directed upon the mark.

Q. What factors must obtain to produce hits at target practice?

A. The piece must be properly supported and correctly aimed.

Q. What is the chief cause of poor shooting?

A. The deflection given to the rifle at the moment of discharge, due to the fact that the soldier, at the moment of firing, instead of squeezing the trigger, jerks it.

Q. What soldiers are required to take the course of instruction in the position and aiming drills?

A. The position and aiming drills will be given to all soldiers who have not qualified as marksman or better in the preceding target year. Some practice in these drills (especially in the trigger-squeeze exercise) is recommended for those who have qualified as marksman or better. The amount to be given is left to the discretion of the company commander.

Q. What are the position and aiming drills designed to teach?

A. 1. The first exercise teaches the position.
2. The second exercise teaches the position and the aim.
3. The third exercise teaches the aim and the manner of squeezing the trigger.
4. The fourth exercise teaches the methods of rapid fire.

Q. What is the position of the rear-sight leaf during the execution of the position and aiming drills?

A. To correct any tendency to cant the piece the rear-sight leaf is raised.

Q. What are the details of the execution of the position exercise?

A. The instructor commands: 1. *Position.* 2. EXERCISE. At the last command, without moving the body or eyes, raise the rifle smartly to the front of the right shoulder to the full extent of the left arm, elbow inclined downward, the barrel nearly horizontal, muzzle slightly depressed, heel of the butt on a line with the top of the shoulder.

(Two.) Bring the piece smartly against the hollow of the shoulder, without permitting the shoulder to give way, and press the rifle against it, mainly with the right hand, only slightly with the left, the forefinger of the right hand resting lightly against the trigger,

the rifle inclined neither to the right nor left.

(Three.) Resume the position of "Ready."

Q. What are the details of the execution of the aiming exercise?

A. The instructor will first direct the sights to be adjusted for the lowest elevation and subsequently for the different longer ranges.

The instructor commands: 1. *Aiming.* 2. EXERCISE. At the last command execute the first and second motions of the position exercise.

(Two.) Bend the head a little to the right, the cheek resting against the stock, the left eye closed, the right eye looking through the notch of the rear sight at a point slightly below the mark.

(Three.) Draw a moderately long breath, let a portion of it escape, then, with the lungs in a state of rest, slowly raise the rifle with the left hand, being careful not to incline the sight to either side, until the line of sight is directly on the mark; hold the rifle steadily directed on the mark for a moment; then without command and just before the power to hold the rifle steadily is lost drop the rifle to the position of "Ready" and resume the breathing.

Q. What precautions must be taken in the execution of the position exercise?

A. The butt of the piece must be pressed firmly, but not too tightly, into the hollow of the shoulder and not against the muscles of the upper arm. If held too tightly, the pulsations of the body will be communicated to the piece; if too loosely, the recoil will bruise the shoulder. If only the heel or toe touches the hollow of the shoulder, the recoil may throw the muzzle down or up, affecting the position of the hit. While both arms are used to press the piece to the shoulder, the left arm should be used to direct the piece and the right forefinger must be left free to squeeze the trigger.

Q. What are the advantages of extending the left arm in firing?

A. It gives greater control over the rifle when firing in a strong wind or at moving targets. It possesses advantages when a rapid and accurate fire is desired.

Q. How may the eye be brought into the line of sight?

A. The eye may be brought to the line of sight either by lowering the head or by raising the shoulder; it is best to combine somewhat these methods, the shoulder to be well raised by raising the right elbow and holding it well to the front and at right angles to the body.

Q. Where are the advantages of raising the right elbow to the height of the right shoulder?

A. If the shoulder is not raised, it will be necessary for the soldier to lower the head to the front in order to bring the eye into the line of sight. Lowering the head too far to the front brings it near the right hand, which grasps the stock. When the piece is discharged, this hand is carried by the recoil to the rear and, when the head is in this position, may strike against the nose or mouth. This often happens in practice, and as a result of this blow often repeated men become gun shy, or flinch, or close their eyes at the moment of firing. Much bad shooting, ascribed to other causes, is really due to this fault. Raising the right elbow at right angles to the body elevates the right shoulder and lifts the piece so that it is no longer necessary to incline the head materially to the front in order to look along the sights.

Q. What precautions must be taken in securing the proper line of sight?

A. The soldier must be cautioned that while raising the line of sight to the mark he must fix his eyes on the mark and not on the front sight; the latter can then be readily brought into the line joining the rear-sight notch and mark. If this plan be not followed, when firing is held on the range at long distances the mark will generally appear blurred and indistinct. The front sight will always be plainly seen, even though the eye is not directed particularly upon it.

The rifle must be raised slowly, without jerk, and its motion stopped gradually. In retaining it directed at the mark,

care must be taken not to continue the aim after steadiness is lost; this period will probably be found to be short at first, but will quickly lengthen with practice.

Q. What are the details of the execution of the trigger-squeeze exercise?

A. The instructor commands: 1. *Trigger squeeze.* 2. EXERCISE. At the command EXERCISE, the soldier will execute the first motion of the aiming exercise.

(Two.) The second motion of the aiming exercise.

(Three.) Draw a moderately long breath, let a portion of it escape, hold the breath and slowly raise the rifle with the left hand until the line of sight is on the mark, being careful not to incline the sights to either side. Contract the trigger finger gradually, slowly and steadily increasing the pressure on the trigger, while the aim is being perfected; continue the gradual increase of pressure so that when the aim has become exact the additional pressure required to release the point of the sear can be given almost insensibly and without causing any deflection of the rifle. Continue the aim a moment after the release of the firing pin, observe if any change has been made in the direction of the line of sight, and then resume the position of "Ready," cocking the piece by raising and lowering the bolt handle.

Q. What precautions should be taken in squeezing the trigger?

A. The trigger should be squeezed, not pulled, the hand being closed upon itself as a sponge is squeezed, the forefinger sharing in this movement. The forefinger should be placed as far around the trigger as to press it with the second joint. By practice the soldier becomes familiar with the trigger squeeze of his rifle, and knowing this, he is able to judge at any time within limits what little pressure is required for its discharge. Having squeezed the trigger to this point, the aim is corrected, and when true, the additional pressure is applied and the discharge follows.

Q. What are the details of the execution of the rapid-fire exercise?

A. The instructor commands: 1. *Rapid-fire exercise.* 2. COMMENCE FIRING. At the first command the first and second motions of the trigger-squeeze exercise are performed. At the second command the soldier performs the third motion of the trigger-squeeze exercise, squeezing the trigger without disturbing the aim or the position of the piece, but at the same time without undue deliberation. He then, without removing the rifle from the shoulder, holding the piece in position with the left hand, grasps the handle of the bolt with the right hand, rapidly draws back the bolt, closes the chamber, aims, and again squeezes the trigger. This movement is repeated until the trigger has been squeezed five times, when, without command, the piece is brought back to the position of "Ready."

When the soldier has acquired some facility in this exercise, he will be required to repeat the movement ten times, and finally, by using dummy cartridges, he may, by degrees, gain the necessary quickness and dexterity for the execution of the rapid fire required in range firing.

Q. What precautions are to be taken in the manipulation of the breech mechanism in the rapid-fire exercise?

A. To hold the piece to the shoulder and, at the same time, manipulate the breech mechanism with the proper facility, are learned only after much practice. Some riflemen, especially men who shoot from the left shoulder, find it easier, in rapid firing, to drop the piece to the position of load after each shot. While at first trial this method may seem easier, it is believed that, with practice, the advantage of the former method will be apparent.

Q. What precautions are to be taken to prevent the soldier from becoming gun shy when firing from the kneeling position?

A. When aiming kneeling there is, from the nature of the position, a tendency to press the butt of the rifle against the upper arm instead of against the hollow of the shoulder; this will necessitate inclining the head considerably to the right to get the line of sight, and by

bringing the rifle so far to the rear will, if the thumb is placed across the stock, cause it to give by the recoil a blow upon the nose or mouth.

These difficulties may be avoided by advancing the right elbow well to the front, at the same time raising it so that the arm is about parallel with the ground. The hollow of the shoulder will then be the natural place for the rifle butt, and the right thumb will be brought too far from the face to strike it in the recoil.

Q. What modification in the normal position of kneeling is authorized?

A. Some riflemen prefer, by bending the ankle, to rest the instep flat on the ground, the weight of the body coming more on the upper part of the heel; this obviates any tendency of the right knee to slip; or, by resting the right side of the foot on the ground, toe pointing to the front, to bring the weight of the body on the left side of the foot. These positions are authorized.

Q. What are the details of the sitting position for firing?

A. To practice the soldier in the exercises in a sitting position, the squad being formed in a single rank, with an interval of one pace between files, the rifle should first be brought to "Order arms;" the instructor then commands: "SIT DOWN."

At this command make a half face to the right, and, assisted by the left hand on the ground, sit down, facing slightly to the right, the left leg directed toward the front, right leg inclined toward the right, both heels, but not necessarily the bottoms of the feet, on the ground, the right knee slightly higher than the left; body erect and carried naturally from the hips; at the same time drop the muzzle of the piece to the front, and to the position of the first motion of load, right hand upon the thigh, just in front of the body, the left hand slightly above, but not resting upon, the left leg.

Q. What is the prone position?

A. The soldier lies flat on his belly on the ground, elbows on the ground, and the upper part of the body resting on them. The legs are spread apart, heels turned in, and the body is inclined slightly to the right. The rifle is held with the left hand at the balance, the right hand at the small of the stock. The left elbow is to the front and slightly to the left, mainly supporting the weight of the body. The right elbow rests lightly on the ground.

Q. What are the advantages of the prone position?

A. It possesses to a greater degree than any other the adaptability to the configuration of the ground. It enables the soldier to deliver fire over low parapets or improvised shelters, thus making the best use of cover.

In the prone position, when aiming, the left elbow should be well under the barrel, the other elbow somewhat to the right, but not so far as to induce any tendency to slip on the ground.

As the body does not yield to the recoil, as when firing standing or kneeling, the force of recoil, if the rifle is not properly held, may severely bruise the soldier. Care must be exercised that the butt is not brought against the collar bone. By moving the shoulder slightly to the front or rear, and by moving the right elbow from the body or toward it, each soldier may determine the position in which the shoulder gives to the butt of the rifle the easiest rest. This will probably be the one in which the force of the recoil will be least felt.

The soldier should persist in this exercise until he obtains a position in which he feels no constraint, which will not subject him to bruises from the recoil, and from which the mark appears plainly through the sights. Having secured such a position, he must not change it when firing, as a variation in the points of support of the rifle, the distance of the eye from the rear sight, or the tension of the hold has a decided effect, especially at the longer ranges, upon the location of the point struck.

(To be continued)

Book Reviews

Trench Warfare. By Major James A. Moss, U. S. A. Menasha (Wisc.): George Banta Publishing Company, 1917. Cloth, 12mo, 274 pages, illustrated. Price, $1.25.

This book gives an excellent idea of the present system of trench warfare to anyone who has not had the advantages of reading the same or similar articles recently appearing in the INFANTRY JOURNAL.

It will prove specially useful and instructive to enlisted men and to any officers who do not receive more complete information through the War Department.

Until receipt of such authoritative instructions from the War Department, this book will prove useful for instruction purposes. Needless to say, it should not be regarded as taking the place of such official instruction pamphlets which will soon be issued.

Every civilian should possess this book in order to gain a proper conception of the present methods of warfare in Europe.

Field Intrenchments. By Captain E. J. Solano, British Service. Preface by Major John C. McArthur, U. S. A. New York: George U. Harvey. Flexible cloth, 16mo, 228 pages. Price, $1.00.

This is a pocket American edition of "Field Entrenchments," by an engineer officer of the British Imperial General Staff, edited by Capt. E. J. Solano. There are eight full chapters and an appendix with nearly 100 instructive illustrations on the practical up-to-date use of trenches which our officers should not fail to read and carry. Briefly the book is an exhaustive guide, in a form understandable by beginners, for the construction, occupation and use of entrenchments and all that pertains to them on the present day battlefield, where this method of warfare is paramount.

This book, together with the reprint of "Field Fortification" (U. S. Infantry Association), gives us both the British and French data.

Trench Warfare. By Lieutenant J. S. Smith, British Expeditionary Forces. New York: E. P. Dutton & Company, 1917. Cloth, 12mo, 144 pages. Price, $1.50.

The author is an American serving as an officer in a famous British regiment, and has been in the war from the beginning.

This book gives an interesting and valuable description of the duties of company officers and enlisted men while in the trenches, gives a good idea of building, holding and taking trenches, and contains much other important information. It is specially valuable to platoon leaders and noncommissioned officers.

Were the price reduced to not more than $1.00, we could fully commend the book to officers. Even at the price asked it would be well for each company to have a copy in the orderly room.

Digest of Davis' Military Law and Manual for Courts-Martial, including Articles of War. By Lieutenant H. G. Ball, Infantry. Kansas City: Franklin Hudson Publishing Company, 1917. Cloth, 16mo, 142 pages.

This publication is based on Davis' Military Law and the Manual for

Courts-Martial. It will serve as an excellent means to cram or review Davis' Military Law. It is, however, apparently based on the Manual for Courts-Martial published prior to the present edition. Paragraph topics of digest are same as Davis' text, and the section on courts-martial refers to pages. This book will serve as a good introductory to study of military law. In the next edition reference should be made to agree with paging of the manual now in use.

Machine-Gun Training. Edited by Captain E. J. Solano, with foreword to American edition by Lieutenant R. Duncan Brown, U. S. A. New York: George U. Harvey, 1917. Flexible cloth, 16mo, 128 pages, illustrated. Price, $1.50.

This is a reprint of an English Manual for Machine-Gun Training, and gives in detail the system of training, instruction and tests required for machine gunners. The illustrations, mostly photographic, are very good. The text also seems to have been photographically reproduced. A valuable aid for this class of training. It is pocket size, thus making it convenient to handle.

Field Quartermaster's Hand Book. By Lieut. Col. F. H. Lawton, Q. M. C., U. S. A.; Major J. C. McArthur, Infantry, U. S. A.; Major W. A. Dempsey, Q. M. C., U. S. R. New York: George U. Harvey. 83 pages with appendix. Price, $2.00.

This book serves a good introduction to quartermaster work, being based on lectures delivered to classes of United States Reserve Officers. The principal part, 83 pages, consists of chapters explaining in an easy way the various functions of the Quartermaster Department. This is followed by the work of one Major John Doe, Q. M. C., U. S. R., in establishing a camp for an Infantry Division in New York State, giving an outline of his duties day by day, showing papers, etc., required. There is, besides, an outline of duties of Regimental Quartermaster and a chapter entitled "Company Commander's Relation to the Quartermaster." The appendix consists of facsimile blanks filled out exemplifying the text. For a handbook the size of page is too large, and, moreover, the price seems excessive.

THE UNITED STATES INFANTRY ASSOCIATION

"The object of the Association shall be to promote the efficiency of the Infantry arm of the military service of our country by maintaining its best standards and traditions, by fostering esprit de corps, by the dissemination of professional knowledge, and by exchange of ideas as to the utilization of such knowledge with particular reference to the rôle of Infantry in modern war."—Article III of the Constitution.

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CONDITIONS OF MEMBERSHIP

All commissioned officers in good standing, or former commissioned officers of honorable record of the regular or volunteer military or naval service including Reserve Corps, and of the National Guard are eligible for regular or associate membership in the Association. Membership dates from the first day of January or July nearest the date of enrollment.

Dues are $1.00 annually, payable in advance. Members may obtain the JOURNAL for $2.00 per year.

All communications should be addressed to the Secretary, the United States Infantry Association, Room 508, Union Trust Building, Washington, D. C. Cable address: Infantry, Washington.

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Subscribers who wish the INFANTRY JOURNAL to reach them at their stations in Europe, during service with the United States expeditionary forces abroad, should furnish the designation of division, regiment, company, and organization to which attached.

Members of the Association will appreciate the difficulty under which we labor in reaching them with notices unless they take it upon themselves to keep us informed of their whereabouts. The Adjutant General's office is too busy to answer inquiries as to addresses, and publication of the monthly directory has been discontinued. Thus both our usual sources of information are closed. We do not like to write in the second person, but here is a case where it is necessary. *It is up to you.* And, by the way, all notices of change of address must reach us by the 25th of the month preceding date of issue in order to affect that number. Requests received later will apply to the next subsequent issue.

An example of the proper way to address mail to officers in Europe would be as follows:

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Amendments to Constitution

The following letter has been received:

WASHINGTON, D. C., July 12, 1917.

THE SECRETARY,
United States Infantry Association,
Washington, D. C.

Sir: The undersigned members of the Infantry Association propose the following changes in the Constitution of the Association: Article IV, Section 10, now reads: "Membership shall date from the nearest first of July or first of January to the date of election." This should be changed to read: "Membership shall date from the first of the month following the date of election."

The purpose of this change is to avoid the congestion incident to sending out a large number of bills and renewal notices at one time and to spread the work over the entire year.

Article X now requires a two-thirds vote to make changes or alterations in the Constitution. This should be changed to read "majority" vote, as it is practically impossible under existing conditions of expanding membership and foreign service to secure a vote from two-thirds of the members.

Respectfully,

F. R. BROWN	G. W. MCIVER	J. B. BENNET
J. C. CASTNER	F. R. CURTIS	H. W. ARNOLD
D. T. MERRILL	CHARLES GERHARDT	W. P. BURNHAM
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J. T. DEAN	O. J. CHARLES	L. D. GASSER
R. O. VAN HORN	W. H. BERTSCH	P. W. BROWN

The articles it is proposed to amend now read as follows, with the words proposed to be stricken out indicated in italics and the words to be inserted printed in black face type, viz:

Sec. 10. Membership shall date from the *nearest first of July or first of January to the date of election* **[first of the month following the date of election]**, and the annual dues thereafter shall become payable on that date in each succeeding year. Members over two years in arrears shall be dropped from the rolls.

Art. X. This Constitution may be amended or altered by a *two-thirds* **[majority]** vote of the regular members either in person or by proxies in writing.

Regimental adjutants are requested to attach the ballot herewith to a sheet of paper and, after obtaining the signatures and vote of all members of the Association present, forward it to the Secretary of the Association, Union Trust Building, Washington, D. C.

BALLOT

United States Infantry Association

On the proposed amendments to the Constitution, I vote as indicated opposite my name.

Infantry Journal Advertiser

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No. 32

WASHINGTON, D. C.
AUGUST 1, 1917

1. Last month we admitted that we had underestimated the demand for the INFANTRY JOURNAL.

2. We were determined not to make the same mistake again, so printed 500 more copies of the July issue than our mailing list called for. We were too modest!

3. On the 18th of July we sent a hurry call to the printer to put the forms on the press again and print an extra thousand copies.

4. We hope to have enough copies now to supply the demand, though indications are that we will have none too many.

5. We want to impress on members of the Association that it is their INFANTRY JOURNAL that is making these strides.

6. A word also to our advertisers, present and prospective. Contracts made now hold at existing rates. They will be higher in the future.

7. This is the effect of cooperation. The Infantry way! The only way!